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(54) **STOKING AND REARRANGING
COMBUSTIBLE MATTER OF A FIRE**

(52) **U.S. Cl.**
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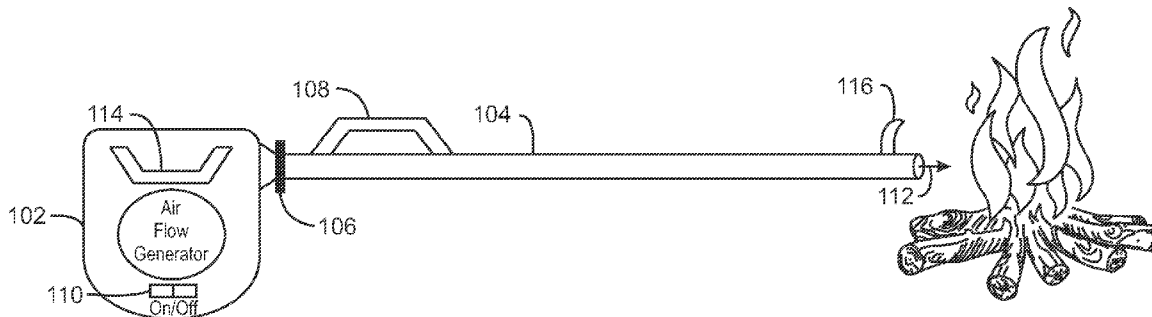
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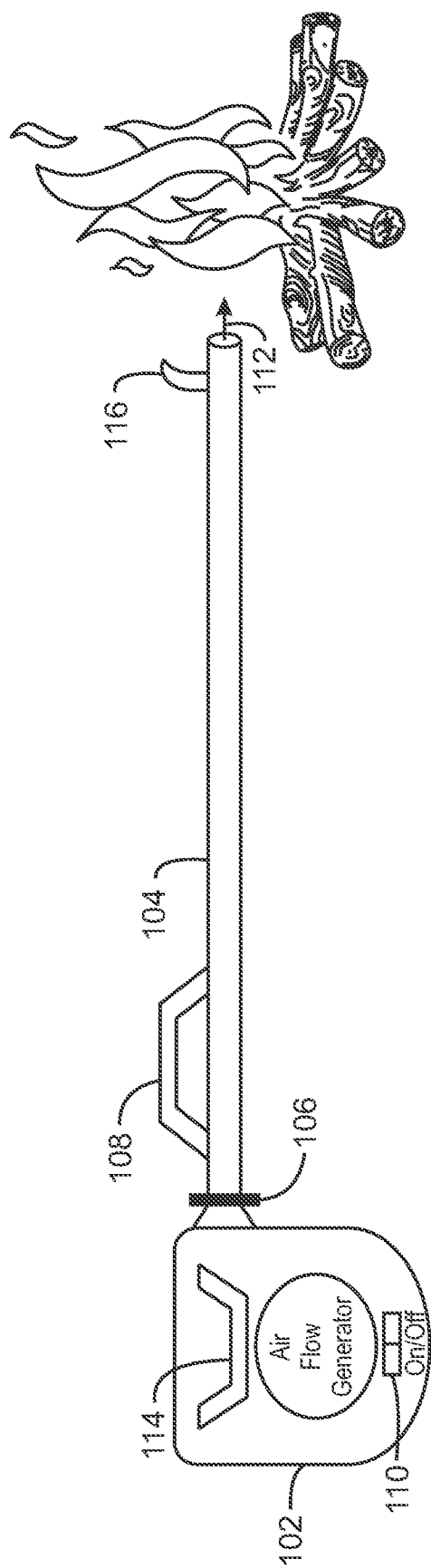
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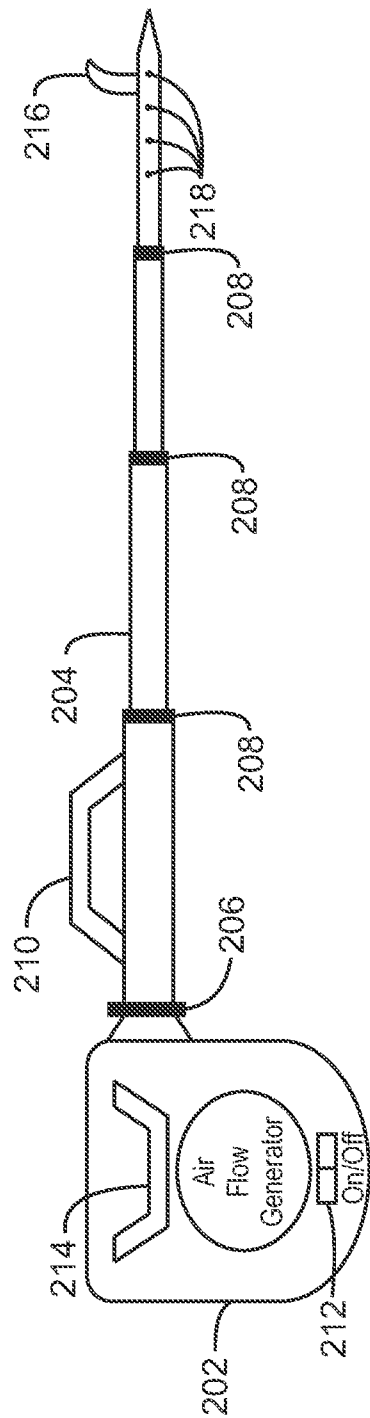
(57) **ABSTRACT**

The present invention is directed toward a system for stoking and arranging materials in a fire. An air flow generator is configured to flow air down a passage in a hollow rod that is configured to prod and rearrange the combustible matter of a burning fire. The hollow rod is durable enough to poke and reposition the combustible materials in a fire. While this poking and repositioning is occurring, air sent from the air flow generator is conducted at an outlet of the hollow rod, thereby stoking the flame burning the combustible matter while the combustible matter is also being poked and prodded at. The hollow rod can be configured to be a telescoping hollow rod that is permitted to extend and collapse on itself for more convenient storage and transport options.

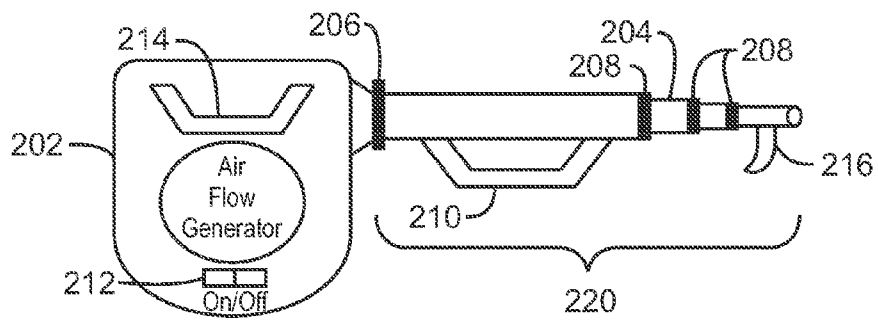




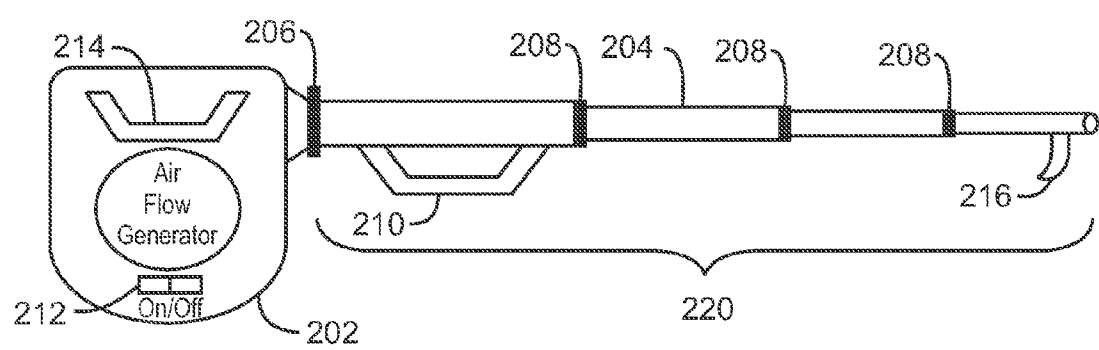
100
FIG. 1



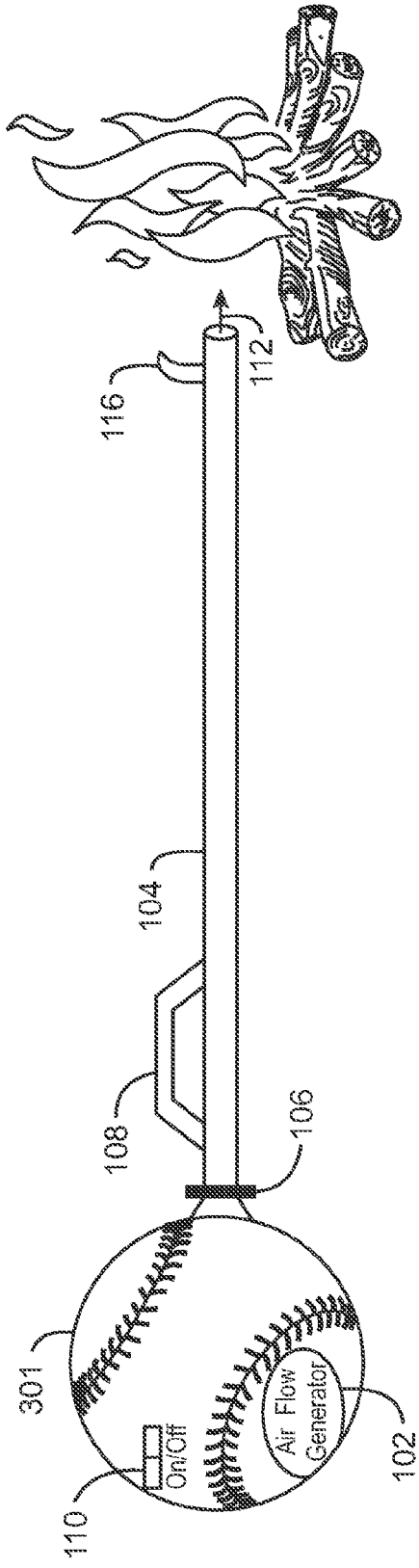
200
FIG. 2A



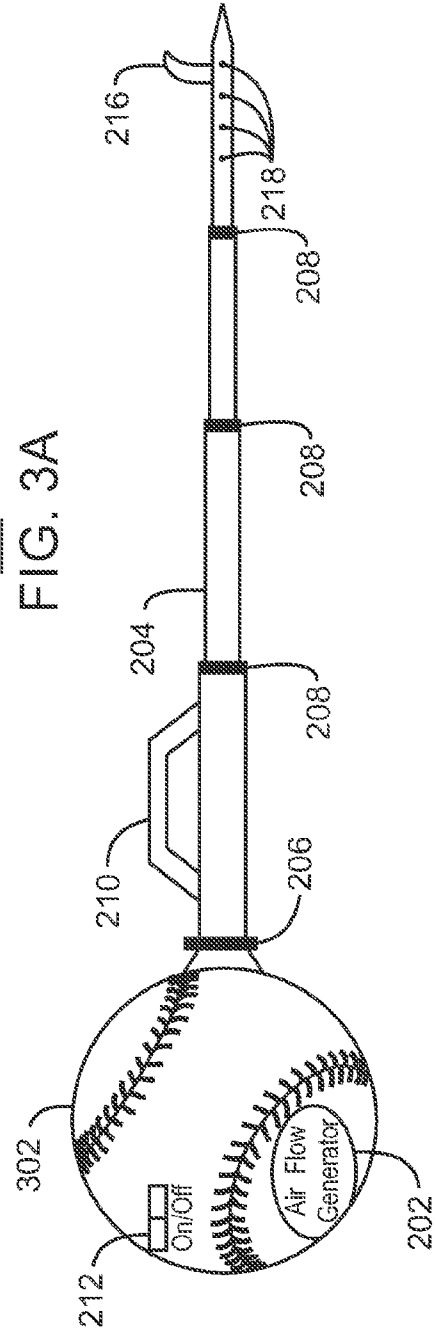
200
FIG. 2B



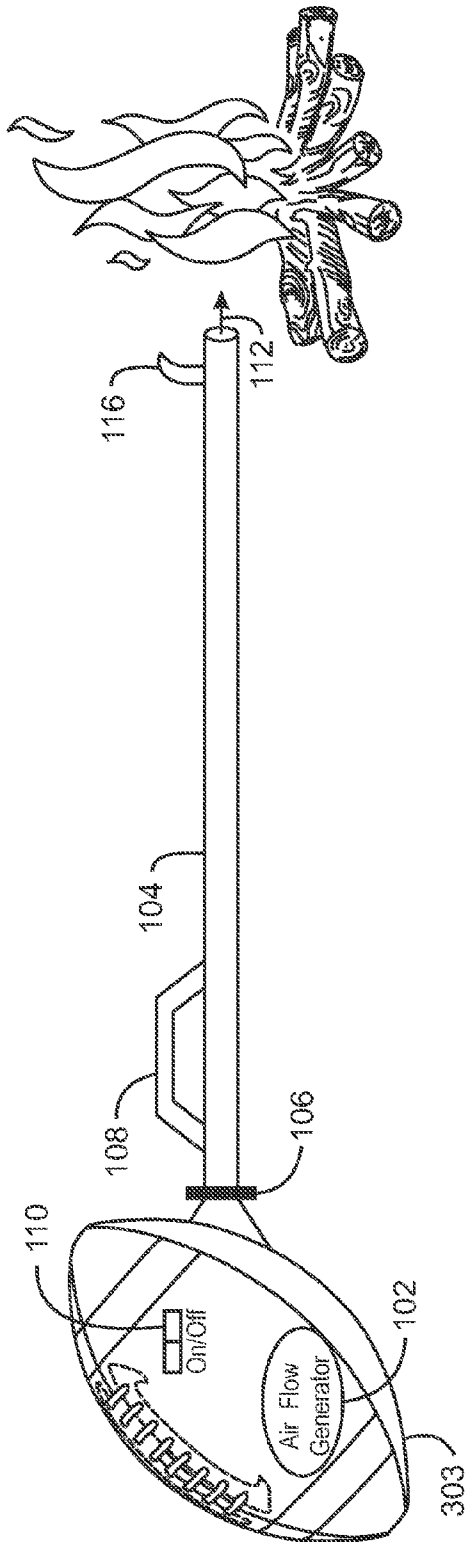
200
FIG. 2C



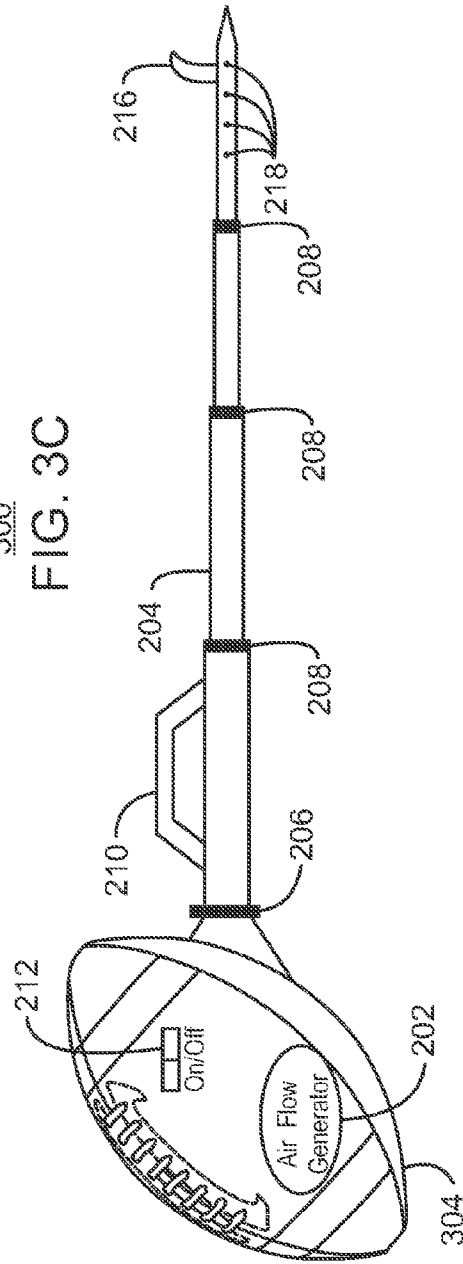
300
FIG. 3A



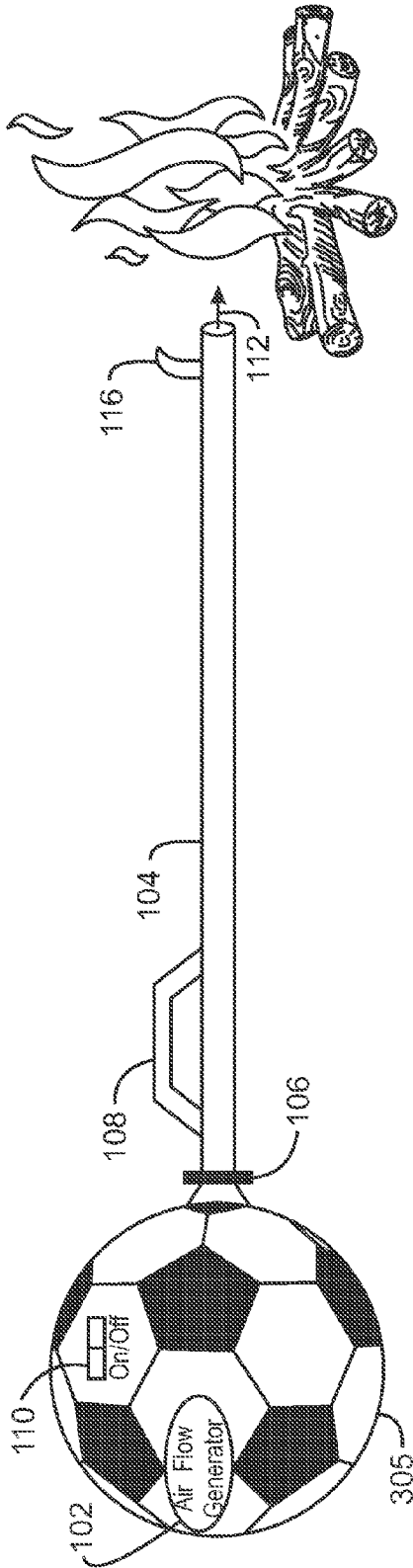
300
FIG. 3B



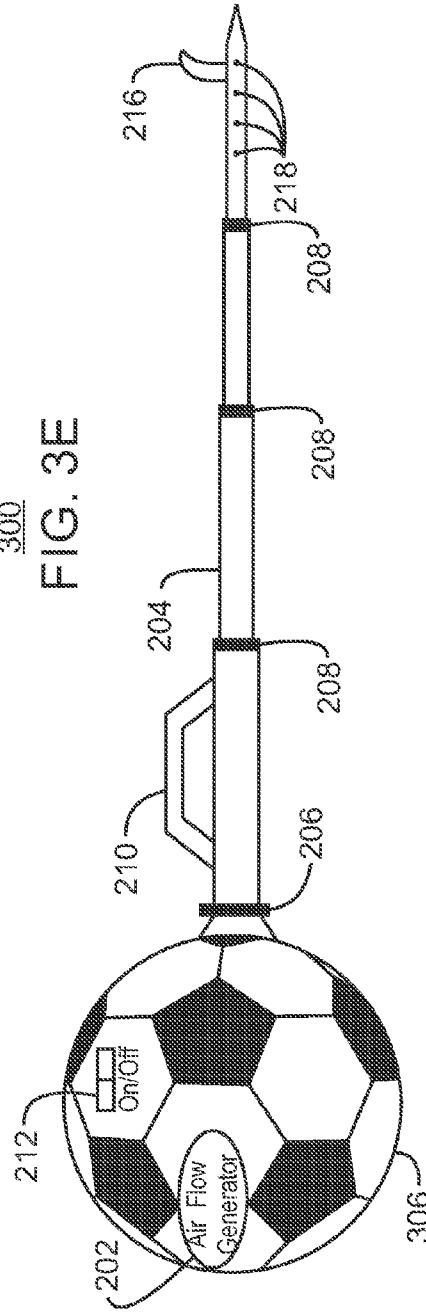
300
FIG. 3C



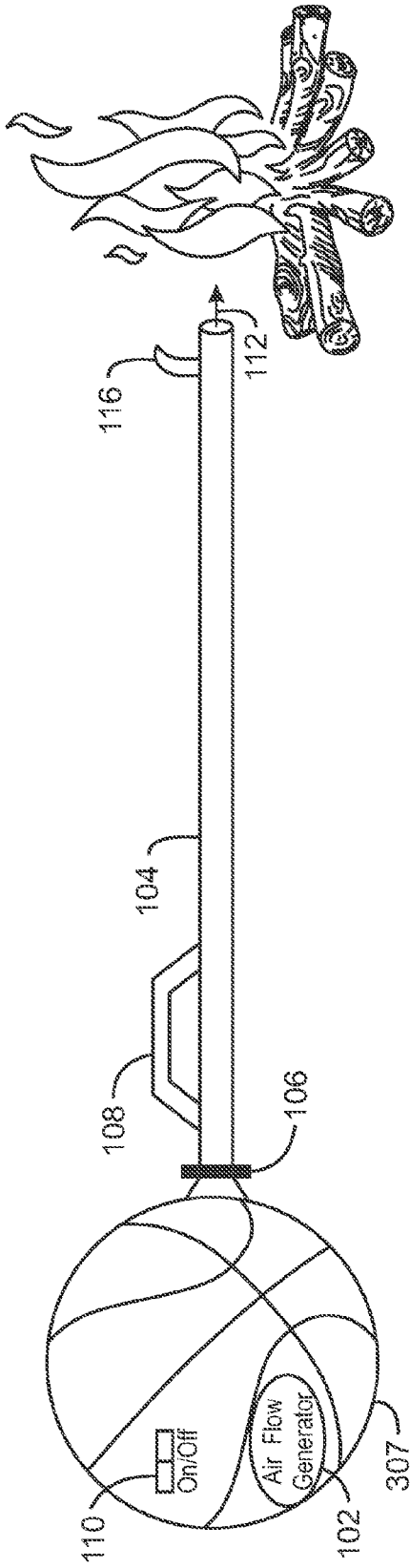
300
FIG. 3D



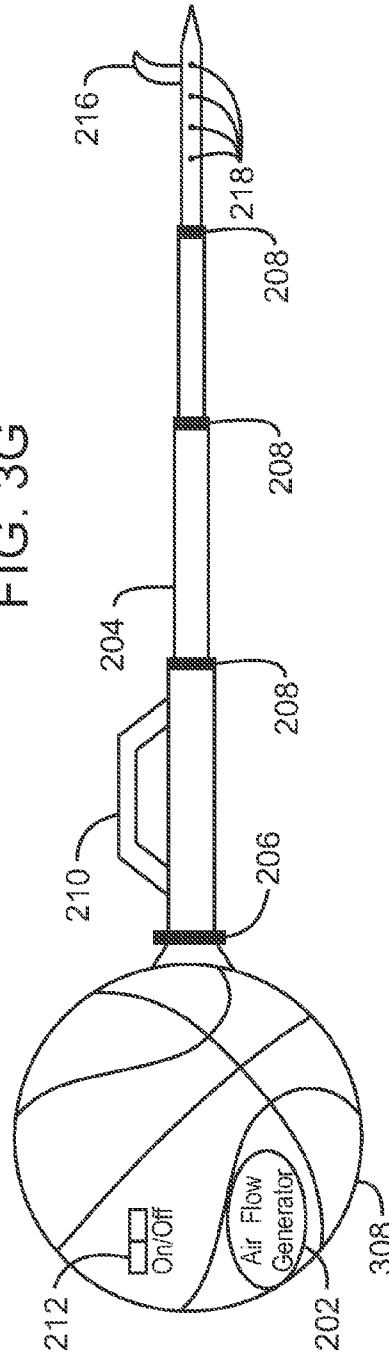
300
FIG. 3E



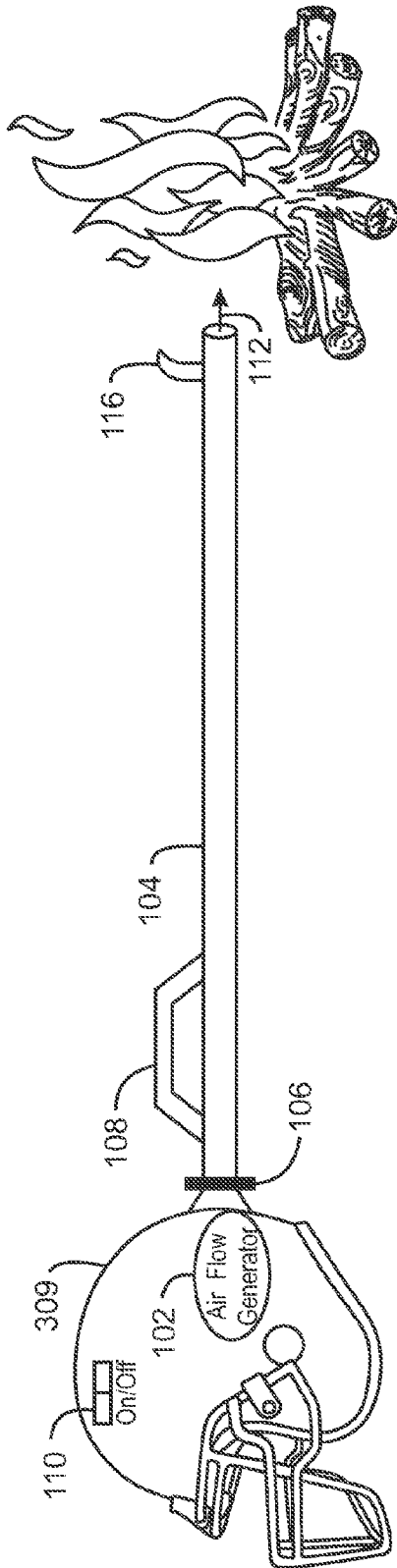
300
FIG. 3F



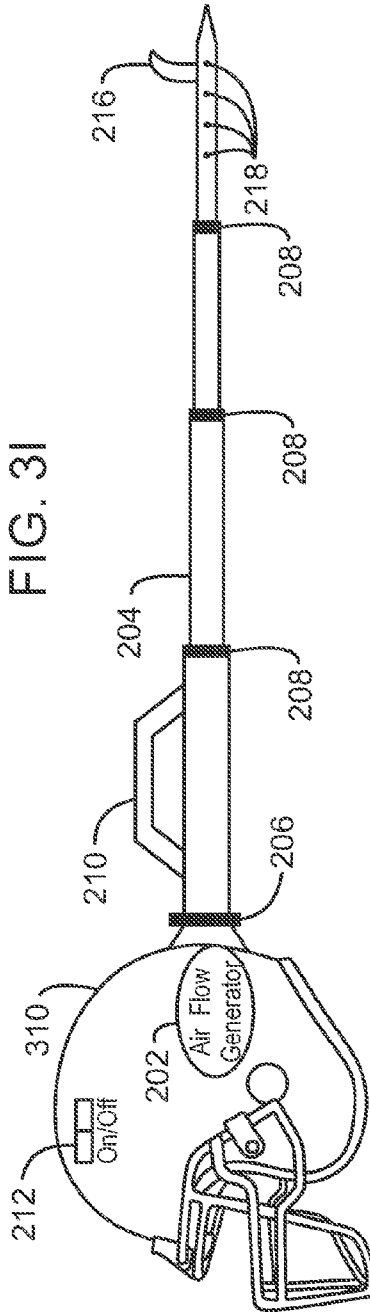
300
FIG. 3G



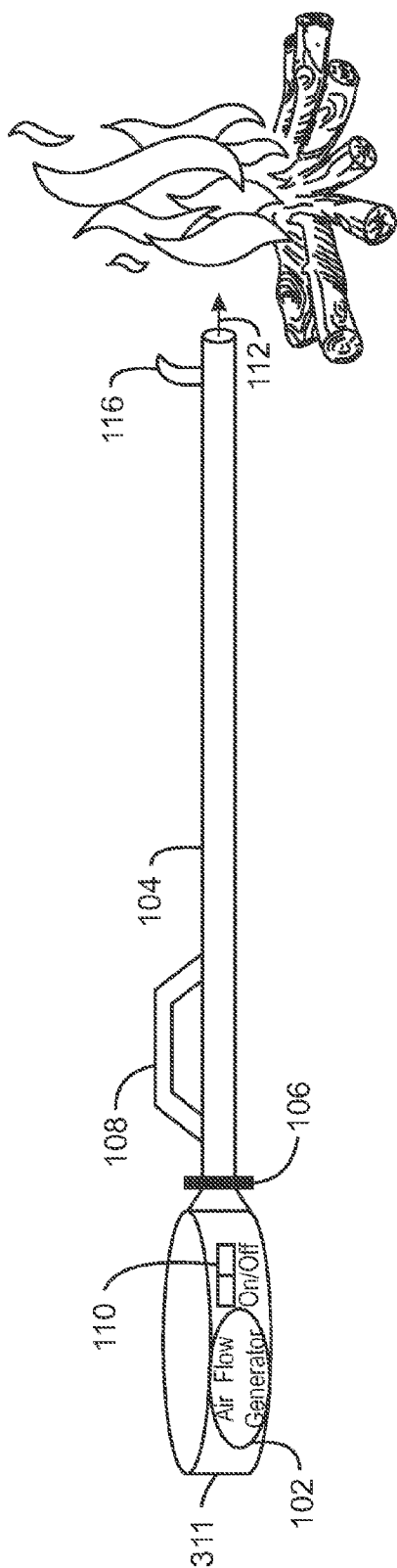
300
FIG. 3H



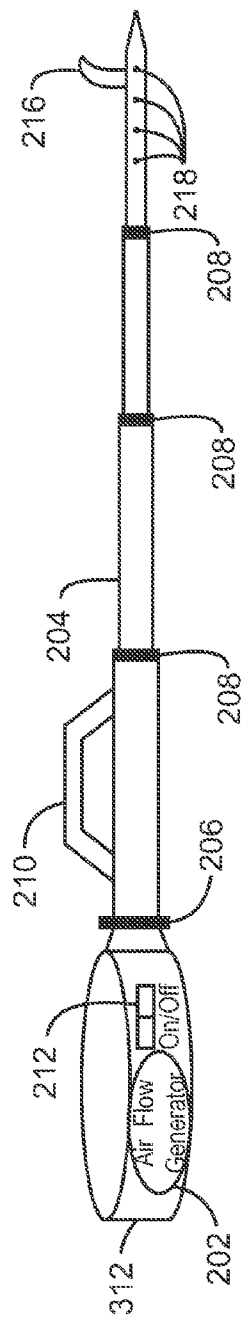
300
FIG. 3I



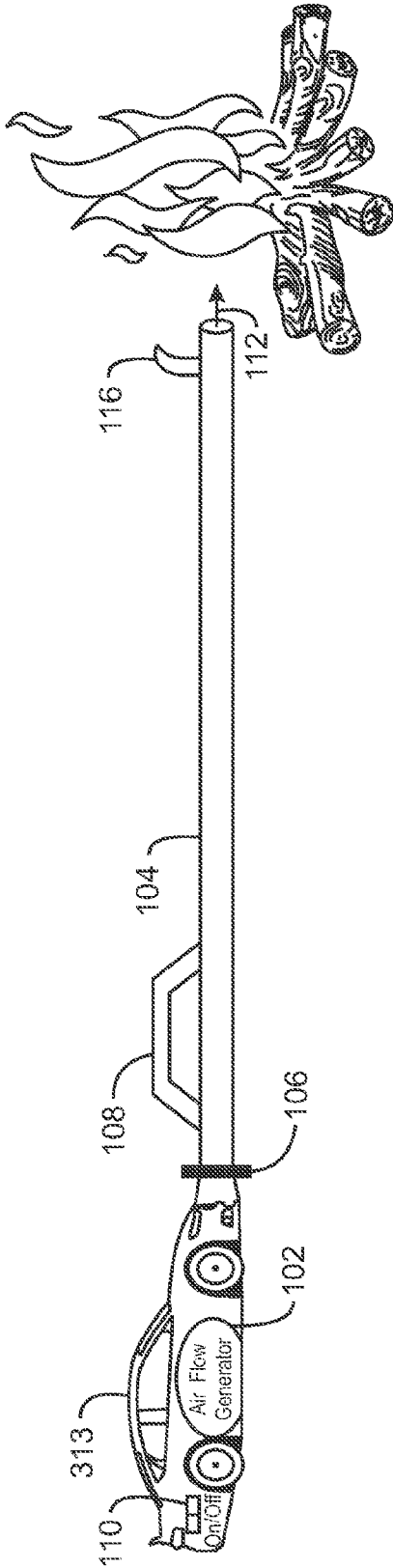
300
FIG. 3J



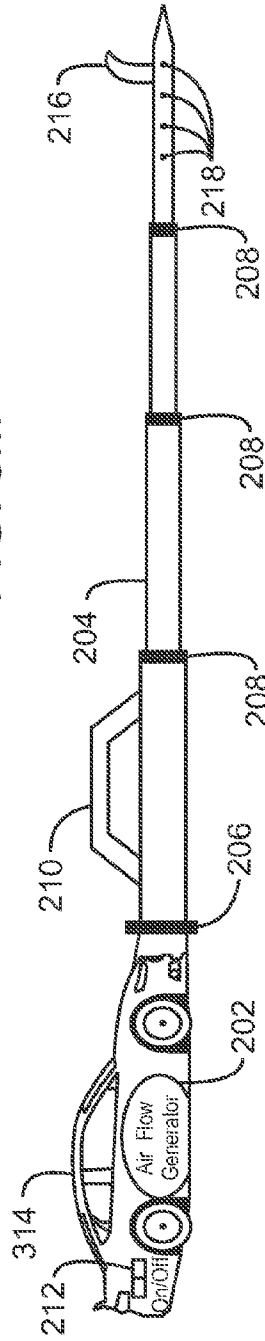
300
FIG. 3K



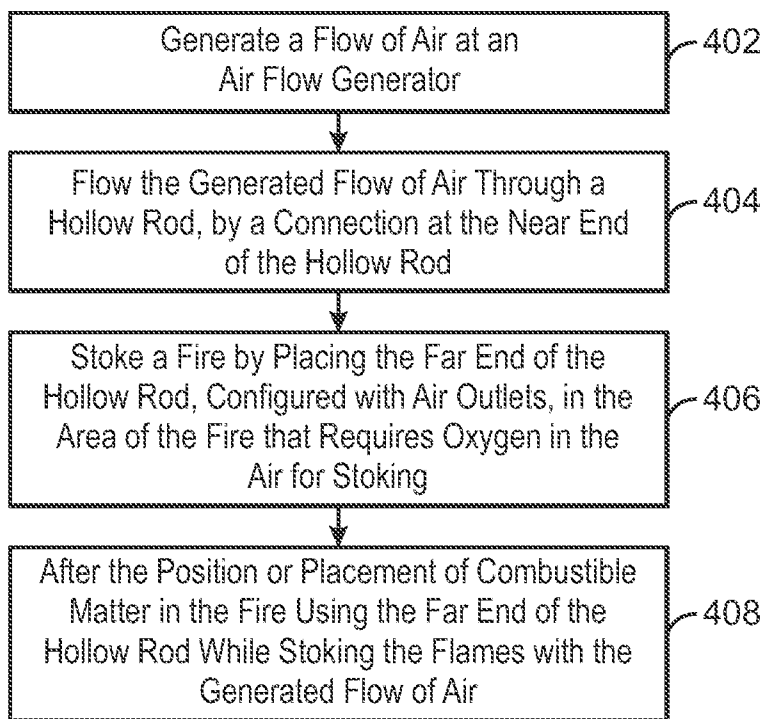
300
FIG. 3L



300
FIG. 3M



300
FIG. 3N



400
 FIG. 4

STOKING AND REARRANGING COMBUSTIBLE MATTER OF A FIRE

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation-in-part of U.S. patent application Ser. No. 14/087,583, Filed Nov. 22, 2013, the contents of which are incorporated by reference as if set forth in their entirety herein.

BACKGROUND

[0002] Various outdoor and indoor activities incorporate and are centered around an open source of fire, from log bonfires to wood burning stoves. As the popularity of hiking and camping and other recreational activities increase, more individuals will be utilizing open fires, like log fueled fires, to provide heat for cooking and warmth, among other things. Outdoor tailgates at football and other sporting events often include charcoal barbecue grills. Indoor fireplaces that are fueled, at least in part, by wooden logs or the equivalent, as well as the types of outdoor fires mentioned, require to be properly ignited and maintained.

[0003] Proper ignition and maintenance of a log or charcoal fire, or the equivalent, can include providing enough air to circulate oxygen and fuel areas of the fire while it kindles. Other ways to maintain a camp or cook fire include rearranging the material fueling the combustion so that air can be more evenly and efficiently circulated around the burning matter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Various features and advantages of the invention will become apparent from the following description of embodiments of the invention, given by way of example only, which is made with reference to the accompanying drawings, of which:

[0005] FIG. 1 is a schematic illustrating an embodiment of the fire stoking and poking system;

[0006] FIG. 2A illustrates a system operable according to embodiments of the present invention;

[0007] FIG. 2B illustrates a system that retracts via a telescoping hollow rod, and operable according to embodiments of the present invention;

[0008] FIG. 2C illustrates a system that extends via a telescoping hollow rod, and operable according to embodiments of the present invention;

[0009] FIGS. 3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H, 3I, 3J, 3K, 3L, 3M, and 3N are schematic diagrams illustrating embodiments of a fire stoking and poking system including a design theme; and

[0010] FIG. 4 is a process flow diagram showing a method of providing oxygen to a fire while rearranging the burning combustible matter of the fire.

SUMMARY

[0011] An example of the current techniques includes a system for stoking a fire with air and arranging materials in a fire. The stoking and poking system includes an air flow generator connected to a power source. The system also includes a hollow rod connected to the air flow generator, wherein the hollow rod is configured to conduct air sent from the air flow generator at an outlet or number of outlets of the hollow rod.

[0012] Another example includes a method for stoking a fire and rearranging combustible matter in a fire. The method includes generating a flow of air at an air flow generator, and flowing the flow of air from the air flow generator through a hollow rod that is connected to the air flow generator at a near end of the hollow rod. The method also includes stoking a fire with a far end of the hollow rod, wherein the far end of the hollow rod is configured to outlet the flow of air generated by the air flow generator. The method discloses altering a position of combustible matter in the fire with the far end of the hollow rod while the flow of air is conducted through an outlet of the hollow rod.

DETAILED DESCRIPTION

[0013] The present disclosure provides systems and techniques for stoking and poking combustible material in a fire. Exemplary embodiments of the current system include providing air and oxygen to select areas of a fire while simultaneously rearranging the combustible particles into preferred positions. Through the system disclosed herein, a user is able to prod the constituent matter of the fire and reposition material for desired burning, while air is being conducted at certain areas of the fire. The system can be made from a hollow metal rod or a similar structure that is configured to be resistant, at least in part, to damage from fire and excessive heat.

[0014] FIG. 1 is a schematic illustrating an embodiment of the fire stoking and poking system 100. The system 100 is configured to attach an air flow generator 102 to a hollow rod 104 at a point of attachment/detachment 106, so the hollow rod 104 can be disconnected from the air flow generator 102 when preferred. The hollow rod 104 can be configured to include a handle 108. The air flow generator 102 can be a battery powered blower, a fan system including an electric motor and a fan connected to a rotatable shaft of the electric motor (not shown). The air flow generator 102 can include an "On/Off" switch 110 that may be toggled to start or stop generating a flow of air.

[0015] The air flow generator 102 can be housed by a housing. The housing of the air flow generator 102 can include a handle 112, as the hollow rod 104 can include a handle 108, for safer and easier use of the system 100. The hollow rod 104 can include a hook 114 as shown in the exemplary embodiment in FIG. 1, or a prong structure that is effective at moving burning wood, as embodied by another example. The hook 114 permits a user to more effectively break-up and relocate burning material in a fire. The air flow generator 102, together with the hook 114 and durable hollow rod 104, create an effective tool for a user to stoke a flame with oxygen provided by air generated by the air flow generator 102. The generated air is configured to be conducted through an outlet or multiple outlets at the end of the hollow rod 104.

[0016] FIG. 2A illustrates a system 200 operable according to embodiments of the present invention. The system 200 shows how the hollow rod 204 is configured to be telescoping, and is able to collapse into a compacted position 220 or extend into an extended position 222. The poking and stoking system 200 is configured to attach an air flow generator 202 to a hollow telescoping rod 204 at a point of attachment/detachment 206. Thus, the hollow telescoping rod 204 can simply be connected and disconnected from the air flow generator 202 when preferred, and the telescoping rod 204 retreated to meet compact storage needs.

[0017] The hollow telescoping rod 204 can be made of a series of hollow rods of progressively smaller diameters. The

hollow rods of various diameter are coupled at various diameter sleeves **208** along the hollow telescoping rod **204**. The hollow rods of various diameter can extend and retract and the orientation of the diameter sleeves **208** will dictate where the various points of expansion and retraction may occur. When fully extended, the hollow telescoping rod **204** can optionally be configured to lock in the extended position, adding to the durability and ensuring the desired repositioning functionality.

[0018] The hollow telescoping rod **204** can be lightweight, and can be configured to include a handle **210**. The air flow generator **202** can be a fan system including an electric motor and a fan connected to a rotatable shaft of the electric motor (not shown). The air flow generator **202** can be powered from a variety of sources, including a standard lithium or alkaline battery, or other types of batteries, an electrical connection via a power cord and energized electrical outlet, or even a battery configured to store energy generated by solar or wind power. The air flow generator **202** can include an “On/Off” switch **210**. The switch **210** can be toggled by a user to start or stop generating a flow of air. The fan of the air flow generator **202** can optionally be a variable speed fan, and an additional switch (not shown) for controlling the speed of the fan can also be implemented.

[0019] The air flow generator **202** can be housed by a housing. The housing of the air flow generator **202** can optionally include a handle **212**, and the hollow rod **204** can include a handle **210**, for more safe and easy use of the poking and stoking system **200**. The hollow telescoping rod **204** can include a hook **216** as shown in the exemplary embodiment in FIG. 2. The hook **216** permits a user to more effectively break-up and relocate burning material in a fire. The hollow telescoping rod **204** must be configured to withstand damage from flames and excessive heat. The telescoping hollow rod **204** is also configured to be strong enough to withstand the force of repositioning combustible materials, like wooden logs, in a fire without the fully-extended rod **204** bending or breaking.

[0020] The air flow generator **202**, together with the hook **214** and durable telescoping hollow rod **204**, create an effective tool for a user to stoke a flame with oxygen provided by air generated at the air flow generator **202**. Air that is generated is configured to be conducted through an outlet **218** at the end of the hollow telescoping rod **204**. There can be one or more than one outlet **218** at the end of the hollow telescoping rod **204** where the generated air is directed to flow out. The generated air may fuel the flames of a fire while the hook **214** or prong at the end of the hollow telescoping rod **204** can prod material into desired positions. Furthermore, the telescoping design of the hollow rod **204**, in addition to the attachment/detachment interface **206**, allows users to conveniently break down, and more easily store and carry the poking and stoking system **200**. The end of the hollow rod can be pointed as indicated for more effective poking and moving of materials. The air from the air flow generator **202** can still flow out of the far end of the hollow rod **204**, but will exit through an outlet **218** upstream of the pointed end.

[0021] The system **200** described herein is useful for individuals on the move, and with limited space for packing a conventional device for fire maintenance. The system **200** is configured to advantageously maintain a non-gas lit fire, whether burning indoors outdoors, by stoking some areas and materials while simultaneously pulling and prodding around other areas and materials of the fire.

[0022] FIG. 2B illustrates a system **200** that retracts via a telescoping hollow rod, and operable according to embodiments of the present invention. The figure shows how only a small amount of space **220** is occupied by the hollow telescoping rod when the rod has been retracted into its most compact position. The hollow telescoping rod **204** is configured to attach and detach from the air flow generator **202** for easy storage and accessibility.

[0023] FIG. 2C illustrates a system **200** that extends via a telescoping hollow rod, and operable according to embodiments of the present invention. The figure indicates the extended length **222** of the hollow telescoping rod **204**. When the system **200** is in this extended position **222**, some embodiments of the claimed method and system can be utilized, i.e., poking and rearranging of burning matter while simultaneously stoking the flame. In both FIGS. 2B and 2C, the handle **210** is facing in a downward direction, in the same plane as the air flow generator. Also, both these figures show a hook **216** that is oriented in the down position.

[0024] The schematic of FIGS. 2A, 2B and 2C is not intended to indicate that the system **200** is to include all of the components shown in FIGS. 2A, 2B and 2C. Further, any number of additional components may be included within the system **200**, depending on the details of the specific implementation. For example, additional hooks or air flow outlets can be included to achieve the desired stoking and poking of the combustible material of a fire.

[0025] FIG. 3A is a schematic illustrating an embodiment of a fire stoking and poking system **300** including a design theme. The design theme can be a custom-made design theme functioning as a housing for the system **300**. Like-numbered components can be described, for example, with respect to FIG. 1. The system **300** of FIG. 3A illustrates a baseball-themed outer casing **301** that surrounds the air flow generator **102**. The outer casing **301** can be in the shape and style of a baseball, while functioning as a rigid exterior for the air flow generator **102** and system **300**.

[0026] FIG. 3B illustrates a system **300** that extends and retracts via a telescoping hollow rod, includes a design theme, and is operable according to embodiments of the present invention. Like-numbered components can be described, for example, with respect to FIG. 2. The system **300** of FIG. 3B illustrates a baseball-themed outer casing **302** that surrounds the air flow generator **202**. The outer casing **302** can be in the shape and style of a baseball, while functioning as a rigid exterior for the air flow generator **202** and system **300**.

[0027] FIG. 3C is a schematic illustrating an embodiment of a fire stoking and poking system **300** including a design theme. Like-numbered components can be described, for example, with respect to FIG. 1. The system **300** of FIG. 3C illustrates a football-themed outer casing **303** that surrounds the air flow generator **102**. The outer casing **303** can be in the shape and style of a football, while functioning as a rigid exterior for the air flow generator **102** and system **300**.

[0028] FIG. 3D illustrates a system **300** that extends and retracts via a telescoping hollow rod, includes a design theme, and is operable according to embodiments of the present invention. Like-numbered components can be described, for example, with respect to FIG. 2. The system **300** of FIG. 3D illustrates a football-themed outer casing **304** that surrounds the air flow generator **202**. The outer casing **304** can be in the shape and style of a football, while functioning as a rigid exterior for the air flow generator **202** and system **300**.

[0029] FIG. 3E is a schematic illustrating an embodiment of a fire stoking and poking system 300 including a design theme. Like-numbered components can be described, for example, with respect to FIG. 1. The system 300 of FIG. 3E illustrates a soccer-themed outer casing 305 that surrounds the air flow generator 102. The outer casing 305 can be in the shape and style of a soccer ball, while functioning as a rigid exterior for the air flow generator 102 and system 300.

[0030] FIG. 3F illustrates a system 300 that extends and retracts via a telescoping hollow rod, includes a design theme, and is operable according to embodiments of the present invention. Like-numbered components can be described, for example, with respect to FIG. 2. The system 300 of FIG. 3F illustrates a soccer-themed outer casing 306 that surrounds the air flow generator 202. The outer casing 306 can be in the shape and style of a soccer ball, while functioning as a rigid exterior for the air flow generator 202 and system 300.

[0031] FIG. 3G is a schematic illustrating an embodiment of a fire stoking and poking system 300 including a design theme. Like-numbered components can be described, for example, with respect to FIG. 1. The system 300 of FIG. 3G illustrates a basketball-themed outer casing 307 that surrounds the air flow generator 102. The outer casing 307 can be in the shape and style of a basketball, while functioning as a rigid exterior for the air flow generator 102 and system 300.

[0032] FIG. 3H illustrates a system 300 that extends and retracts via a telescoping hollow rod, includes a design theme, and is operable according to embodiments of the present invention. Like-numbered components can be described, for example, with respect to FIG. 2. The system 300 of FIG. 3H illustrates a basketball-themed outer casing 308 that surrounds the air flow generator 202. The outer casing 308 can be in the shape and style of a basketball, while functioning as a rigid exterior for the air flow generator 202 and system 300.

[0033] FIG. 3I is a schematic illustrating an embodiment of a fire stoking and poking system 300 including a design theme. Like-numbered components can be described, for example, with respect to FIG. 1. The system 300 of FIG. 3I illustrates a football-themed outer casing 309 that surrounds the air flow generator 102. The outer casing 309 can be in the shape and style of a football helmet, while functioning as a rigid exterior for the air flow generator 102 and system 300.

[0034] FIG. 3J illustrates a system 300 that extends and retracts via a telescoping hollow rod, includes a design theme, and is operable according to embodiments of the present invention. Like-numbered components can be described, for example, with respect to FIG. 2. The system 300 of FIG. 3J illustrates a football-themed outer casing 310 that surrounds the air flow generator 202. The outer casing 310 can be in the shape and style of a football helmet, while functioning as a rigid exterior for the air flow generator 202 and system 300.

[0035] FIG. 3K is a schematic illustrating an embodiment of a fire stoking and poking system 300 including a design theme. Like-numbered components can be described, for example, with respect to FIG. 1. The system 300 of FIG. 3K illustrates a hockey-themed outer casing 311 that surrounds the air flow generator 102. The outer casing 311 can be in the shape and style of a hockey puck, while functioning as a rigid exterior for the air flow generator 102 and system 300.

[0036] FIG. 3L illustrates a system 300 that extends and retracts via a telescoping hollow rod, includes a design theme, and is operable according to embodiments of the present invention. Like-numbered components can be described, for example, with respect to FIG. 2. The system 300 of FIG. 3L

illustrates a hockey-themed outer casing 312 that surrounds the air flow generator 202. The outer casing 312 can be in the shape and style of a hockey puck, while functioning as a rigid exterior for the air flow generator 202 and system 300.

[0037] FIG. 3M is a schematic illustrating an embodiment of a fire stoking and poking system 300 including a design theme. Like-numbered components can be described, for example, with respect to FIG. 1. The system 300 of FIG. 3M illustrates a racecar-themed outer casing 311 that surrounds the air flow generator 102. The outer casing 313 can be in the shape and style of a stock car or racing vehicle, while functioning as a rigid exterior for the air flow generator 102 and system 300.

[0038] FIG. 3N illustrates a system 300 that extends and retracts via a telescoping hollow rod, includes a design theme, and is operable according to embodiments of the present invention. Like-numbered components can be described, for example, with respect to FIG. 2. The system 300 of FIG. 3N illustrates a racecar-themed outer casing 314 that surrounds the air flow generator 202. The outer casing 312 can be in the shape and style of a stock car or racing vehicle, while functioning as a rigid exterior for the air flow generator 202 and system 300.

[0039] The schematics of FIGS. 3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H, 3I, 3J, 3K, 3L, 3M, and 3N are not intended to indicate that the system 300 is to include all of the components shown in FIGS. 3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H, 3I, 3J, 3K, 3L, 3M, and 3N. Further, any number of additional components may be included within the system 300, depending on the details of the specific implementation. For example, various additional themes can be used as functional housings for an air flow generator that are aesthetically pleasing. Custom-made design themes can also be used as examples for an outer casing of the fire poking and stoking system described herein.

[0040] FIG. 4 is a process flow diagram showing a method of providing oxygen to a fire while rearranging the burning combustible matter of that fire. The method for stoking a fire and repositioning combustible matter in a fire 400 begins at block 402, where a flow of air is generated at an air flow generator. The air flow generator can be a fan connected to a rotatable shaft of an electric motor, and the electric motor can receive electrical power from a variety of different sources. The air flow generator effectively pumps oxygen to a fire to stoke combustion where the air flow is directed.

[0041] The method 400 continues at block 404, when air from the air flow generator is flowed through a hollow rod that is connected to the air flow generator at a near end of the hollow rod. The near end of the hollow rod is configured to readily attach and detach from a point of attachment found on the housing of the air flow generator. The fan or blower connected to the electric motor is configured to pump air from the near end of the hollow rod to an outlet at the far end of the hollow rod.

[0042] At block 406, a fire is stoked with the far end of the hollow rod, wherein the far end of the hollow rod is configured to outlet the flow of air generated by the air flow generator. There can be a single outlet or there can be multiple outlets at the end of the hollow rod. An outlet at the far end of the hollow rod is configured to conduct a concentrated stream of air and oxygen pumped from the near end of the hollow rod to fuel a particular area of a fire.

[0043] At block 408, the position or placement of combustible matter in the fire is altered by using the far end of the

hollow rod while the flow of air is conducted through an outlet of the hollow rod. The hollow rod should be structurally configured to endure, without significant bending, the force and stress associated with altering, prodding, or repositioning heavy combustible matter in a fire, such as a wooden log. The hollow rod can optionally be aligned telescopically, wherein the hollow rod is configured to extend and collapse on itself, thereby saving space while maintaining functionality. The hollow rod can also be configured to include a hook or a prong mechanism at the far end of the hollow rod, making the task of arranging the combustible material in a fire more simple and effective.

[0044] The process flow diagram of FIG. 4 is not intended to indicate that the steps of the method 400 are to be executed in any particular order, or that all of the steps of the method 400 are to be included in every case. Further, any number of additional steps not shown in FIG. 4 may be included within the method 400, depending on the details of the specific implementation.

[0045] While the present techniques may be susceptible to various modifications and alternative forms, the embodiments discussed above have been shown only by way of example. However, it should again be understood that the techniques are not intended to be limited to the particular embodiments disclosed herein. Indeed, the present techniques include all alternatives, modifications, and equivalents falling within the true spirit and scope of the appended claims.

What is claimed is:

1. A system for stoking and arranging materials in a fire, comprising:
 - an air flow generator connected to a power source; and
 - a hollow rod connected to the air flow generator, wherein the hollow rod is configured to conduct air sent from the air flow generator at an outlet of the hollow rod.
2. The system of claim 1, wherein the power source that is connected to the air flow generator comprises a battery.
3. The system of claim 1, wherein the power source that is connected to the air flow generator comprises a power cord and electrical plug configured to plug into an electrical socket that is electrically energized.
4. The system of claim 1, wherein the hollow rod is further configured to attach and detach from the air flow generator.
5. The system of claim 1, wherein the hollow rod further comprises a hook attached at the end of the rod furthest from the air flow generator.
6. The system of claim 1, wherein the hollow rod is further configured as a telescoping hollow rod.
7. The system of claim 6, wherein the telescoping hollow rod further comprises a hook at the end of the rod furthest from the air flow generator.
8. The system of claim 6, wherein the telescoping hollow rod further comprises a handle at the end of the rod closest to the air flow generator.
9. The system of claim 6, wherein the telescoping hollow rod is configured to extend into an extended position and to collapse into a compacted position.
10. The system of claim 6, wherein the telescoping hollow rod is configured to stoke a fire with air generated by the air

flow generator, and further comprising a locking mechanism configured to lock the telescoping hollow rod when extended in an extended position.

11. The system of claim 6, wherein the telescoping hollow rod is configured to withstand the force of positioning and repositioning combustible matter of a fire.

12. The system of claim 11, wherein the telescoping hollow rod is configured to position and reposition logs in a fire while the air flow generator is generating air that is conducted at the logs in the fire through an outlet in the telescoping hollow rod.

13. The system of claim 1, wherein the air flow generator is housed by a housing, and further comprises a handle connected to the housing of the air flow generator.

14. The system of claim 1, wherein the air flow generator comprises an electric motor and a fan connected to a rotatable shaft of the electric motor.

15. The system of claim 1, wherein the air flow generator is configured to generate air when a control switch is toggled on, and configured to stop generating air when a control switch is toggled off.

16. The system of claim 1, wherein the hollow rod is comprises outlet holes concentrated at the end furthest from the air flow generator, wherein the outlet holes are configured to conduct air from the air flow generator around.

17. The system of claim 13, wherein the housing for the air flow generator is comprised of a design theme.

18. The system of claim 17, wherein the design theme comprises a sports-related theme.

19. The system of claim 18, wherein the sports-related theme comprises a baseball design, a football design, a football helmet design, a basketball design, a soccer ball design, a hockey puck design, or a racecar design.

20. The system of claim 17, wherein the design theme comprises a custom-made design.

21. A method for stoking a fire and rearranging combustible matter in a fire, comprising:

- generating a flow of air at an air flow generator;
- flowing the flow of air from the air flow generator through a hollow rod that is connected to the air flow generator at a near end of the hollow rod;
- stoking a fire with a far end of the hollow rod, wherein the far end of the hollow rod is configured to outlet the flow of air generated by the air flow generator; and
- altering a position of combustible matter in the fire with the far end of the hollow rod while the flow of air is conducted through an outlet of the hollow rod.

22. The method of claim 21, wherein the flow of air is generated by an electric motor and a fan connected to a rotatable shaft of the electric motor.

23. The method of claim 21, wherein the hollow rod is configured to extend and collapse on itself.

24. The method of claim 21, wherein the hollow rod is configured to include a hook or a prong mechanism at the far end of the hollow rod.

25. The method of claim 22, wherein the electric motor is housed by a custom-made design theme.

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