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Inventor(s)	Carlson; Thomas E. et al.

Air Squeegee Kit

Abstract

An air squeegee kit configured for a wet vacuum cleaning system. The air squeegee includes at least one an air squeegee housing attached adjacent to a vacuum inlet of the wet vacuum cleaning system. The air squeegee housing includes an air plenum and a slot orifice, wherein the slot orifice is configured at an angle to provide an air squeegee to dislodge, lift, and direct liquid and dirt from a surface to be cleaned directly into the vacuum inlet.

Inventors:	Carlson; Thomas E. (Trabuco Canyon, CA), Peters; Neal (Kingston, TN)
Applicant:	Surface Cleaning Innovations, LLC (Knoxville, TN)
Family ID:	1000008601900
Assignee:	Surface Cleaning Innovations, LLC (Knoxville, TN)
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Background/Summary

RELATED APPLICATION [0001] This application is a continuation-in-part of PCT application No. PCT/US2023/079205, filed on Nov. 9, 2023, now pending which claims priority to provisional application Ser. No. 63/383,411, filed Nov. 11, 2022, now expired.

TECHNICAL FIELD

[0002] The disclosure is directed to a kit that is configured to be added to various soft and hard surface cleaning devices to more effectively remove particles and dirt with minimum wetting and higher efficiency.

BACKGROUND AND SUMMARY

[0003] Surface and Carpet cleaning of residential, commercial, and industrial operations is an essential part of keeping people healthy from bacteria and viruses that are brought into the floors each time they are walked on. In addition, such frequent cleaning also supports indoor air quality by removing the dirt and dust that gets into carpet and hard surfaces during the walking steps and keeps the flooring looking new and maintains its original appearance for long durations.

[0004] Cleanliness and hygiene are the two most important factors in maintaining high standards of any commercial sector such as restaurants, hospitality, healthcare, entertainment venues to name a few. It is necessary not just to ensure proper health and safety of the staff but also to create a good perception among the customers. In response to the pandemic, consumers are very specific in terms of selecting places which offer clean and healthy environments.

[0005] Hospital application of floor cleaning machines is the major driver of the global market. Evidence suggests that the hospital surfaces and floors are mostly contaminated with pathogens that are the major cause of health infections. According to a recent multistate survey of about 183 acute care hospitals in the U.S. reported that approximately 1 out of every 25 patients developed at least one health infection per day due to lack of cleanliness. With the aim to ensure good health of the patients and staff, hospitals are increasingly using commercial floor cleaning machines during the day and with use for industrial floor cleaning applications at night.

[0006] Broadly speaking there are three types of floor cleaning machines for home, commercial and industrial uses. The three types include: Home Floor Cleaning Machines—Cleaning machines that have compact designs and are small in size are considered to be home floor cleaning machines. Since these are designed for residential purposes, they are quite small in size. This ensures that these machines can access small spaces efficiently. The small floor cleaning machines, which are quite affordable, are ideal for small homes as they can be easily moved around the house. These are also quite light weight. One of the major advantages of this type of machine is that they take up very little storage space.

[0007] Commercial Floor Cleaning Machines—These cleaning machines are ideal for busy spaces like restaurants, hospitals, schools, offices, business areas, exhibition and conference halls as well as hotels. Since these carpets and hard floors require deeper cleaning, it is advisable to utilize commercial cleaning machines in these spaces. This equipment is a little costlier as compared to the residential. However, these are extremely durable and ensure quality cleaning. These machines are well equipped to fight tough grime and stubborn dirt, even dirt that is embedded deep into carpet.

[0008] Industrial Floor Cleaning Machines—These are heavy-duty cleaning machines that are quite durable and can wipe out very stubborn mud and dirt. These cleaning machines are designed in a way to provide long cleaning sessions. These are usually used for cleaning carpets that accumulate a great amount of debris and are exposed to larger dust particles.

Encapsulation Carpet Cleaning

[0009] Encapsulation carpet cleaning is a “very low moisture” (VLM) type of cleaning using a

special encapsulating cleaner that features polymers to encapsulate and crystallize stains and dirt for vacuuming. The detergents break the bind of the soil to the fiber and releases the soil from the carpet/fabric and the encapsulating polymers surround and holds the dirt and soil, so it is vacuumed out similar to dry soil, leaving additional soil protection on the carpet/fibers and providing an extended soil resistance. For the past few decades, encapsulation has gained popularity and garnered a reputation for both commercial and residential carpet cleaning.

[0010] Literature shows that vacuuming and floor cleaning technology has made improvements in all sectors since the invention of vacuum cleaners around 1900. The most significant of these improvements for each sector are briefly discussed below.

[0011] Despite the long history of advancement in cleaning techniques and machines, there remains a need to improved cleaning devices that are more effective in removing dirt and debris while using significantly reduced amounts of cleaning compositions.

[0012] With regard to the foregoing, an embodiment of the disclosure provides an air squeegee kit configured for a wet vacuum cleaning system. The air squeegee kit includes at least one an air squeegee housing attached adjacent to a vacuum inlet of the wet vacuum cleaning system. The air squeegee housing includes an air plenum and a slot orifice, wherein the slot orifice is configured at an angle to provide an air squeegee to dislodge, lift, and direct liquid and dirt from the hard or soft surface to be cleaned directly into the vacuum inlet.

[0013] In some embodiments, the air squeegee kit further includes one or more liquid spray nozzles and/or brushes or brush-rollers adjacent to the vacuum inlet and configured to enhance the efficiency of the wet vacuum cleaning system for hard and soft surfaces.

[0014] In some embodiments, the air squeegee is configured to work in conjunction with the liquid spray nozzles and/or the brush-rollers for dislodging the dirt.

[0015] In some embodiments, the air squeegee housing is made of a material selected from plastic, aluminum, stainless steel, and other light weight composite materials.

[0016] In some embodiments, The air squeegee kit is configured for operation over the following ranges: [0017] Width: 0.6-800 cm, such as from about 10 to about 500 cm; [0018] Orifice Gap: 0.00025-20 mm, such as from about 0.005 to about 10 mm; [0019] Distance from surface: 1-25.4 cm, such as from about 3 to about 15 cm; [0020] Air Velocities: 1-1524 m/min, such as from about 10 to about 500 m/min; [0021] Air pressure: 0.1-70 kg-force/cm.^{sup.2}, such as from about 1 to about 40 kg-force/cm.^{sup.2}; [0022] Air flow rate: 0.1-1500 m.^{sup.3}/min, such as from about 10 to about 500 m.^{sup.3}/min.

[0023] In some embodiments, the air squeegee housing is configured to be manually or automatically adjusted with respect to the hard or soft surface to be cleaned.

[0024] In some embodiments, the air squeegee is configured to be supplied by an external air source selected from the group consisting of a compressor, a turbofan, clean exhaust from a vacuum source, and the like. In other embodiments, the external air source is a preheated air source configured to rapidly dry the wet surfaces.

[0025] In some embodiments, the air squeegee kit includes a vacuum inlet attachment.

[0026] In some embodiments, there is provided a floor and carpet cleaning system configured for home, commercial, or industrial use. The floor and carpet cleaning system includes at least one air squeegee, a vacuum inlet adjacent to the at least one air squeegee, and one or more liquid spray nozzles and/or brushes or brush-rollers adjacent to the vacuum inlet and configured to enhance the efficiency of a wet vacuum cleaning system for floor or carpet surfaces to which the at least one air squeegee is attached. The at least one air squeegee is configured at an angle to dislodge, lift, and direct dirt and liquid from the floor or carpet surfaces to be cleaned directly into the vacuum inlet.

[0027] In some embodiments, the floor and carpet cleaning system includes one or more air squeegee(s), each having an adjustable air pressure.

[0028] In some embodiments, there is provided a pressure washer system configured for hard surface cleaning. The pressure washer system includes an air squeegee, and a high pressure water

spray nozzle adjacent to the air squeegee, wherein the pressure washer system is configured for highly effective cleaning of the hard surface and removal of wastewater for enhanced protection of environmental water systems by reducing pollution.

[0029] In some embodiments, the air squeegee and high pressure water spray nozzle are configured to be operated independently.

[0030] In some embodiments, the air squeegee is configured to apply preheated air to the hard surface for rapid drying thereof.

[0031] The air squeegee kits and systems describe herein may be used for improving the effectiveness of tank (wet/dry) vacuums, auto-scrubber commercial vacuums, and ride on vacuums. Likewise, the air squeegees described herein may be used for carpet and fabric wet extraction wands, robot extractors, spotting units, walk behind extractors, autos-scrubbers, and ride on extractors. The air squeegees may also be used with carpet encapsulation extraction machines. When used with window washing units, the air squeegee may provide one step cleaning and removal of dirt and debris from windows. The air squeegee may be used with a pressure washing system for greater cleaning efficiency.

[0032] The disclosed embodiments offer many improvements in the carpet and surface cleaning systems including, but not limited to, the following: [0033] 1) Increased soil removal over existing methods of wet extraction, or encapsulation cleaning techniques; [0034] 2) One pass cleaning that can be constructed to work in both directions for increase efficiency; [0035] 3) Less water usage; [0036] 4) Less energy usage; [0037] 5) Less labor usage; [0038] 6) Deeper cleaning than existing cleaning methods; [0039] 7) Quicker dry times due to the air squeegee process thereby reducing the growth of mold and bacteria; and [0040] 8) Higher levels of soil removal in dry vacuuming carpets.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0041] FIG. 1 is a schematic illustration of a combination of an air squeegee specifically directed into a vacuum inlet for lifting and removal of a liquid from a hard surface.

[0042] FIG. 2 is a schematic illustration showing how the air squeegee pushes and lifts water and/or soil in a squeegee like process from any soft or hard surface.

[0043] FIG. 3 is a schematic illustration of a combination of spray heads and an air squeegee specifically directed into a vacuum inlet for lifting and removal of material using a wet cleaning system.

[0044] FIG. 4 is a schematic illustration showing details of wet extraction wand design version of the air squeegee, spray heads and the vacuum inlet.

[0045] FIG. 5 is a schematic illustration of a carpet cleaning wet extraction wand design version including spray heads, air squeegee, and the vacuum inlet.

[0046] FIG. 6 is a schematic view of an air squeegee device.

[0047] FIG. 7 is a schematic illustration of how the air squeeze system can be enclosed as part of an attachment to be added internally or externally to a wet vacuum, wet auto-scrubber, wet extraction, or various other machines or applications, for more effective and efficient liquid removal from a surface.

[0048] FIG. 8 is a schematic illustration of an air squeegee used with a rotary brush cleaning system.

[0049] FIG. 9 is a schematic illustration of an air squeegee used with an alternative rotary brush cleaning system.

DETAILED DESCRIPTION

[0050] This invention specifically deals with greatly improving the efficiencies of cleaning systems for all types of surfaces by developing and incorporating an air squeegee into the cleaning head of

the systems. For purposes of this disclosure, the “air squeegee kit” may include an air squeegee housing alone, a separate air supply, an air squeegee housing in combination with a vacuum port and/or a liquid spray nozzle or liquid spray head, or an air squeegee housing in combination with brushes or brush-rollers. A schematic arrangement of the components for a typical cleaning device **10** containing an air squeegee kit having a housing **12** and an orifice slot **14** is illustrated in FIG. **1**. The components shown in FIG. **1** are configured to provide an air squeegee **16** angled toward a vacuum inlet **18** for removing liquid and soil from a surface **20**. Soil and liquid is removed by a vacuum through the vacuum inlet **18** while moving the cleaning device **10** over the surface **20** in the direction of arrow **22**. A blower or fan within the housing **12**, or external pressurized air supply provides the motive air source for the air squeegee **16**. The air squeegee is specifically directed toward the surface **20** at an angle to dislodge and lift liquid and dirt from the surface **20** in a straight consistent line direction and to push the liquid and dirt into the vacuum inlet **18** for more complete soil and dirt removal and recovery.

[0051] FIG. **2** is a schematic illustration of the principles for cleaning provided by an air squeegee **16**. A source of air **24** is provided to an air plenum **26** in the housing **12** and is forced through the slot orifice **14** to provide a squeegee effect **26** on liquid or dirt **28** as the air squeegee is moved in the direction of arrow **22** across the surface **20** to be cleaned. The air squeegee **16** and the vacuum inlet **18** (FIG. **1**) work in conjunction to clean and dry wet surfaces **20** rapidly, in the case of the use of liquid or foam applied to the surface **20**. The drying process can be further enhanced by supplying heated air as the air source **24** to the air squeegee housing **12**. The air source **24** can be preheated by passing it through a heater chamber assembly or may be heated from the exhaust air from the vacuum head, which is slightly heated from cooling the vacuum motor during its operation. Thus, mixing the exhaust air from the vacuum motor with the air source **24** to the squeegee housing **12** preheats the air to some extent. Thus, the cleaning system described herein for the hard surfaces and carpets is more efficient in drying the wet surfaces when heated air is used as the air source **24**.

[0052] The air squeegee described herein is one of the most economical and cost-effective ways to deliver a hard-hitting sheet of air over short or long distances. Pressured air delivered through compressed air, or a turbo fan are the only requirements for operation. Air squeegees utilize the Coanda effect (entrainment of surrounding air) to amplify the air upwards of 40 times, making them very efficient. Compressed air or turbo fans are used in many industrial applications such as drying, cleaning, wiping, cooling, and blow off. Air squeegees use pressurized air plenums and orifice slots containing a series of holes or a continuous exit air slot through which the pressurized air exits in a laminar flow pattern. In some embodiments, a blower may be within the air squeegee housing or be separate from the air squeegee housing. The exit air velocity from the slot orifice creates an impact air velocity directed to the surface of whatever object the air is directed. The impact air velocity can range from a gentle breeze to greater than Mach 0.6 (12,000 m/min) to alter the surface of a product without mechanical contact. Air squeegees are among the most efficient methods of removing or controlling unwanted or foreign substances on any surface.

[0053] FIG. **3** is a schematic view of an air squeegee housing **12** attached adjacent to a vacuum inlet **18** for a cleaning device **30** that includes one or more liquid or foam spray heads **32** for applying liquid or foam **34** to the surface **20** to be cleaned. As the cleaning device **30** is moved across the surface **20** the dirt and soil are released from the surface **20** by the air squeegee **16** and recovered in the direction of arrow **36** through the vacuum inlet **18** of the device **30**. In the case of wet cleaning, the spray heads **32** apply a cleaning solution to the surface **20**. In other embodiments, the cleaning solution or foam may be applied to the surface **20** by a brush, roller-brush (cylindrical or rotary) or other alternative liquid or foam application device.

[0054] As will be discussed later, there is an unlimited variety of applications for the air squeegee, along with controls to change the air squeegee exit air pressures, velocity, and the air squeegee height and orientation. The air squeegee can be produced as a kit that can be installed or attached to

a standard vacuum head (upright or backpack), auto-scrubber, consumer mop/vacuum system, and many other cleaning devices creating a significant upgrade to the performance of the cleaning device.

[0055] Pressure washing of concrete/stone and ceramic or power extraction of soil or dirt from carpets can be achieved by attaching the air squeegee housing **12** adjacent to a vacuum inlet **18** as shown in FIG. **1** or FIG. **3**. The combination of the air squeegee, vacuum, and water creates pressure washing or power extraction of the surfaces to be cleaned with immediate recovery and quicker dry times. In the foregoing applications, the pressurized air squeegee removes imbedded soils from the surfaces to be cleaned by pressure washing and vacuuming in a single step. Such a system has many advantages including; lower water use, shorter cleaning times with the dual action of the air and water, and cleaner surfaces due to the immediate removal of dirt and soil which will reduce the reabsorption of the liquified soil that often happens in the pressure washing cleaning process. The system will also reduce water pollution that happens due to pressure washing water run-off.

[0056] In another embodiment, a wand **38** may be equipped with an air squeegee **40** as shown in FIG. **4** for spot cleaning applications. The wand **38** includes a vacuum inlet **42** and may include a spray nozzle **44** for applying liquid or foam to an area to be cleaned. When applying a wet cleaning solution, the air squeegee **40** of the wand **38** acts to dislodge and lift the liquid and dirt from the surfaces to be cleaned while the dirt is simultaneously being directed to the vacuum inlet **42**. FIG. **5** illustrates an application of a carpet extraction wand **46** having an air squeegee housing **48** attached thereto and spray nozzles **50** for applying a cleaning solution to a carpet **52**. The air squeegee is configured to move the cleaning solution along with the soil toward the vacuum inlet **54** as the carpet extraction wand **46** is moved in the direction of arrow **60**. A window washer wand containing an air squeegee may be similarly arranged on a wand, with or without the spray nozzles to clean windows.

[0057] A schematic illustration of how an air squeegee **12** is designed to operate is illustrated in FIG. **6**. Incoming pressurized air **24** circulates within the air plenum **26** and exits out of the slot orifice **14** at an angle to a surface to be cleaned ranging from about **20** to about **80** degrees creating a squeegee-like air stream **58** on a surface as shown in FIG. **2**. Air squeegee housings may be made out of resilient materials, such as plastic, aluminum, stainless steel, composites, or other substances. The overall air squeegee housing configuration includes, but is not limited to, a bar shape, a finger shape, a tear shape, a semicircular shape, a square shape, a triangle shape, a curved shape, and a variety of custom shapes. The air squeegees described herein may have the following physical and operating ranges: [0058] Width: 0.6-800 cm, such as from about 10 to about 500 cm; [0059] Orifice Gap: 0.00025-20 mm, such as from about 0.005 to about 10 mm; [0060] Distance from surface: 1-25.4 cm, such as from about 3 to about 15 cm; [0061] Air Velocities: 1-1524 m/min, such as from about 10 to about 500 m/min; [0062] Air pressure: 0.1-70 kg-force/cm.^{sup.2}, such as from about 1 to about 40 kg-force/cm.^{sup.2}; [0063] Air flow rate: 0.1-1500 m.^{sup.3}/min, such as from about 1 to about 500 m.^{sup.3}/min.

[0064] The following non-limiting example is presented by way of illustration for an air squeegee kit attached to a wet carpet cleaning machine.

Wet Carpet Cleaner Example

[0065] The following range of parameters for an air squeegee are provided for a wet carpet cleaning. The variance in the ranges may exceed the following parameters depending on the thickness of the carpet, how delicate or robust the carpet is, and the width and speed of the carpet cleaning machine. [0066] 1) Width of cleaning machine: 2.54 cm to 122 cm (Wet Carpet Cleaning from an edge tool to a ride on autoscrubber) [0067] 2) Knife Gap: 2.54 microns to 102 microns for Carpet Extraction [0068] 3) Distance from carpet surface: 0 to 15.5 cm [0069] 4) Air Velocities: 610-4600 m/min [0070] 5) Air pressure: 0.7-10.5 kg-force/cm.^{sup.2} [0071] 6) Air flow rate: 0.28-8.5 m.^{sup.3}/min

[0072] It will be appreciated that each type of material to be cleaned may have different operating parameters for optimum effectiveness.

[0073] The incoming air **24** to the air squeegee **16** may be supplied by an external source such as a compressor or turbofan. In addition to the external sources, clean exhaust from a vacuum source may also be used to assist in air production for the air squeegee **16**. The connection of the air squeegee housing **12** to an external air source may be made using tubing, whose placement in the system will depend on the use of the air squeegee in the final product. For example, for home use, a small tubing may be incorporated inside the vacuum inlet tube with a quick disconnect attachment for ease of connecting and disconnecting to the air squeegee housing **12**. The return vacuum tube will also be part of the main tubing connecting the external air source and vacuum to the air squeegee housing **12**.

[0074] In some applications, the vacuum or cleaning process will incorporate fixed or rotary brushes to further agitate the surface to assist in the loosening of soil before the final push and lift of the air squeegee. In wet cleaning applications, the air squeegee pushes air into the carpet and lifts the cleaning solution from down in the carpet directly into the vacuum inlet for easy removal.

[0075] FIG. 7 is a schematic illustration of an air squeegee housing that may be added internally or externally to a wet or dry auto-scrubber, wet or dry extraction, or various other machines or applications, for more effective and efficient dry or wet removal. In FIG. 7, the air squeegee housing **60** is attached to a wet auto-scrubber **62**. The air squeegee housings described herein can be incorporated into any machine or process that is meant to remove wet liquid/materials from any surface in any condition. Accordingly, the air squeegees may be used with home, commercial and industrial cleaning machines. Air squeegee kits will have universal fittings for ease of adaptation by the most popular wet vacuum models for home use. It is anticipated that the use of such kits will be able to significantly enhance the vacuum performance of the systems fitted with the air squeegee kits. Air squeegee kits may also be provided for commercial and industrial wet vacuum removal systems.

[0076] In almost all systems described herein, the air squeegee is adjustable as needed. The adjustment will be either manual or automated. All of the fittings may include quick connect or press fit fitting. Single or multiple ports may be used for pressurizing the air squeegee. The clean filtered exhaust return air from vacuum port can also be used to input the air squeegee. Such a use of the return air may also reduce the noise effect. The use of the air pressure through the air squeegee may reduce the power required for the vacuum system. The commercial and industrial systems may use multiple air squeegees and in more than one orientation to create the highest efficiency of soil and water pick up.

[0077] As described above, The air squeegee kit may be used to effectively clean of all type of surfaces including, but not limited to, floor and carpet cleaning, concrete and other hard surface cleaning, pressure washing with air assist, window washing, and decontamination of radioactive/hazardous facilities.

[0078] The disclosed embodiments use novel designs of delivering the air through the use of an air squeegee that is specifically designed to apply air across a straight line to hit the surface causing a squeegee like effect. The squeegee like effect lifts and directs the materials to be removed directly into a vacuum port for one step removal with or without the need for a shroud thereby making the final vacuum and surface cleaning systems more effective, efficient, lighter weight and easier to use.

[0079] The above described air squeegee kits may be installed within or attached to any vacuum or cleaning system for unlimited industries and uses. The air squeegee kit may also be added to a portable mop/vacuum system for home, commercial and industrial applications. A ride on or walk behind auto-scrubber, or extractor system may include dual air squeegee kits in front and in back of the machine for recovery in both directions for home, commercial, and industrial applications. An air squeegee kit may be installed within a robot vacuum, mop, or carpet-surface cleaner to increase

the effectiveness of the soil or liquid removal for home, commercial and industrial applications. [0080] FIG. 8, illustrates a cleaning system 70 containing cylindrical rotary brushes 72, a liquid or foam application nozzle 74, a vacuum inlet 76, and an air squeegee housing attached adjacent to the vacuum inlet 76 between the cylindrical brushes 72 for cleaning a surface 80 moving in the direction of arrow 82. FIG. 9 illustrates an alternative arrangement of a cleaning system 90 that includes cylindrical brushes 92, a vacuum inlet 94, and an air squeegee housing 96 attached to the vacuum inlet 94 after the cylindrical brushes 92 for cleaning a surface 98 moving in the direction of arrow 100. In other embodiments, the rotary brushes may be horizontal circular rotary brushes rather than cylindrical brushes.

[0081] While particular embodiments have been described, alternatives, modifications, variations, improvements, and substantial equivalents that are or can be presently unforeseen can arise to applicants or others skilled in the art. Accordingly, the appended claims as filed and as they can be amended are intended to embrace all such alternatives, modifications variations, improvements, and substantial equivalents.

Claims

1. An air squeegee kit configured for a wet vacuum cleaning system, the air squeegee kit comprising: at least one an air squeegee housing attached adjacent to a vacuum inlet of the wet vacuum cleaning system, the air squeegee housing further comprising an air plenum and a slot orifice, wherein the slot orifice is configured at an angle to provide an air squeegee to dislodge, lift, and direct liquid and dirt from a surface to be cleaned directly into the vacuum inlet.
2. The air squeegee kit of claim 1, further comprising one or more liquid spray nozzles and/or brushes or brush-rollers adjacent to the vacuum inlet and the air squeegee housing and configured to enhance the efficiency of the wet vacuum cleaning system for surfaces.
3. The air squeegee kit of claim 2, wherein the air squeegee is configured to work in conjunction with the liquid spray nozzles and/or the brush-rollers for dislodging the dirt.
4. The air squeegee kit of claim 1, wherein the air squeegee housing is comprised of a material selected from the group consisting of plastic, aluminum, stainless steel, and other light weight composite materials.
5. The air squeegee kit of claim 1 configured for operation over the following ranges: Width: 0.6-800 cm; Orifice Gap: 0.00025-20 mm; Distance from surface: 1-25.4 cm; Air Velocities: 1-1524 m/min; Air pressure: 0.1-70 kg-force/cm^{sup.2}; Air flow rate: 0.1-1500 m^{sup.3}/min.
6. The air squeegee kit of claim 1, wherein the air squeegee housing is configured to be manually or automatically adjusted with respect to the surface to be cleaned.
7. The air squeegee kit of claim 1, wherein the air squeegee is configured to be supplied by an external air source selected from the group consisting of a compressor, a turbofan, clean exhaust from a vacuum source, and the like.
8. The air squeegee kit of claim 7 wherein the external air source is a preheated air source configured to rapidly dry the wet surface.
9. The air squeegee kit of claim 1, further comprising one or more liquid spray heads configured for spraying foam or cleaning solution to the surface to be cleaned.
10. A floor and carpet cleaning system configured for home, commercial, or industrial use, comprising, at least one air squeegee, a vacuum inlet adjacent to the at least one air squeegee, and one or more liquid spray nozzles and/or brushes or brush-rollers adjacent to the vacuum inlet and configured to enhance the efficiency of a wet vacuum cleaning system for floor or carpet surfaces to which the at least one air squeegee is attached, wherein the at least one air squeegee is configured at an angle to dislodge, lift, and direct dirt and liquid from the floor or carpet surfaces to be cleaned directly into the vacuum inlet.
11. The floor and carpet cleaning system of claim 10, comprising one or more air squeegee(s), each

having an adjustable air pressure.

- 12.** The floor and carpet cleaning system of claim 10, wherein the at least one air squeegee is configured with adjustable heated air for rapid drying of the floor or carpet surfaces being cleaned.
 - 13.** The floor and carpet cleaning system of claim 10, comprising one or more liquid spray nozzles configured for applying a cleaning solution or foam to the floor or carpet surfaces to be cleaned.
 - 14.** A pressure washer system configured for hard surface cleaning, the pressure washer system comprising: an air squeegee, and a high pressure water spray nozzle adjacent to the air squeegee, wherein the pressure washer system is configured for highly effective cleaning of the hard surface.
 - 15.** The pressure washer system of claim 14, wherein the air squeegee and high pressure water spray nozzle are configured to be operated independently.
 - 16.** The pressure washer system of claim 14, where the air squeegee is configured to apply preheated air to the hard surface for rapid drying thereof.
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