Nov. 21, 1944. G. D. JAQUITH ET AL 2,363,002

VACUUM CLEANER CONSTRUCTION

Filed Sept. 17, 1940 2 Sheets-Sheet 1

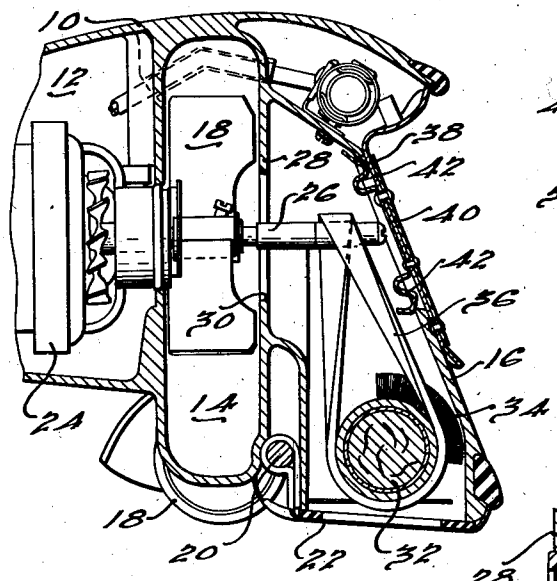


FIG. 1.

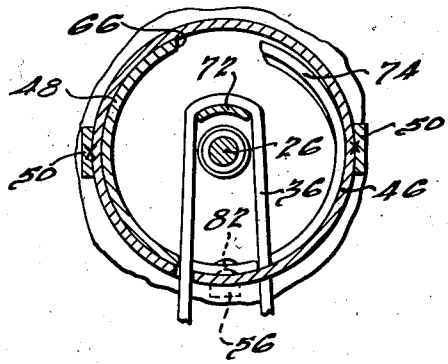


FIG. 2.

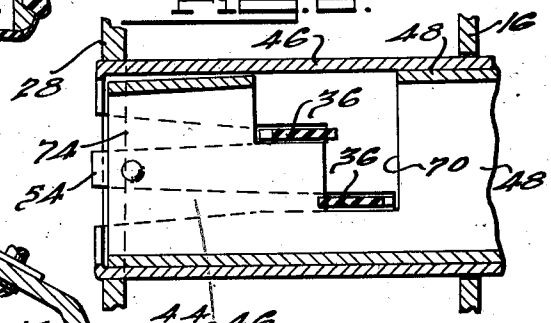


FIG. 3.

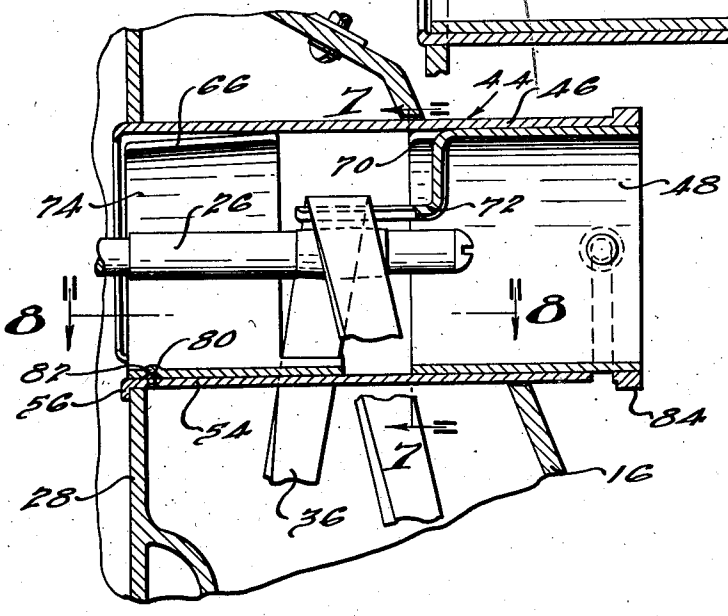


FIG. 6.

INVENTORS.
George D. Jaquith,
BY Keith N. Elliott.
Edwin J. Billuff
ATTORNEY

Nov. 21, 1944. G. D. JAQUITH ET AL 2,363,002

VACUUM CLEANER CONSTRUCTION

Filed Sept. 17, 1940 2 Sheets-Sheet 2

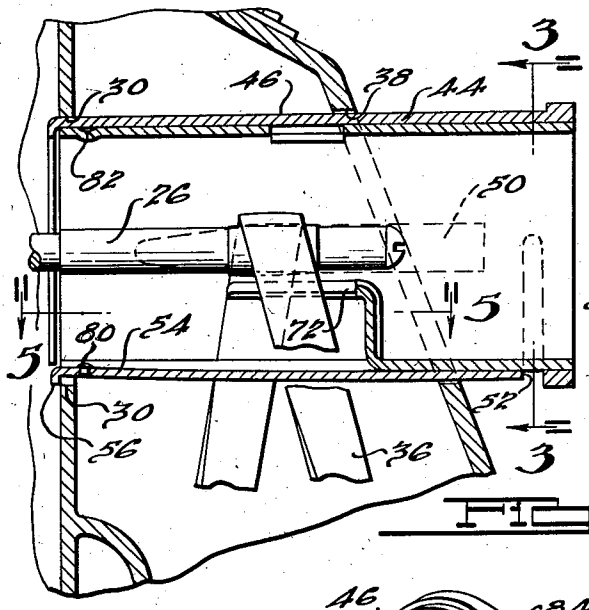


FIG. 2.

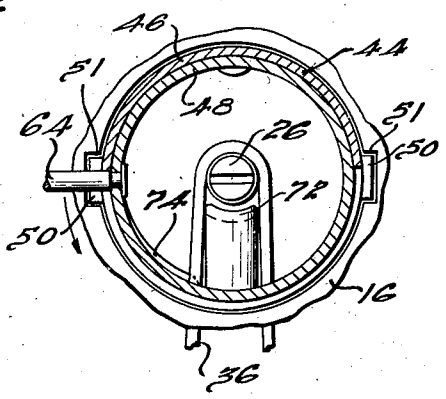


FIG. 3.

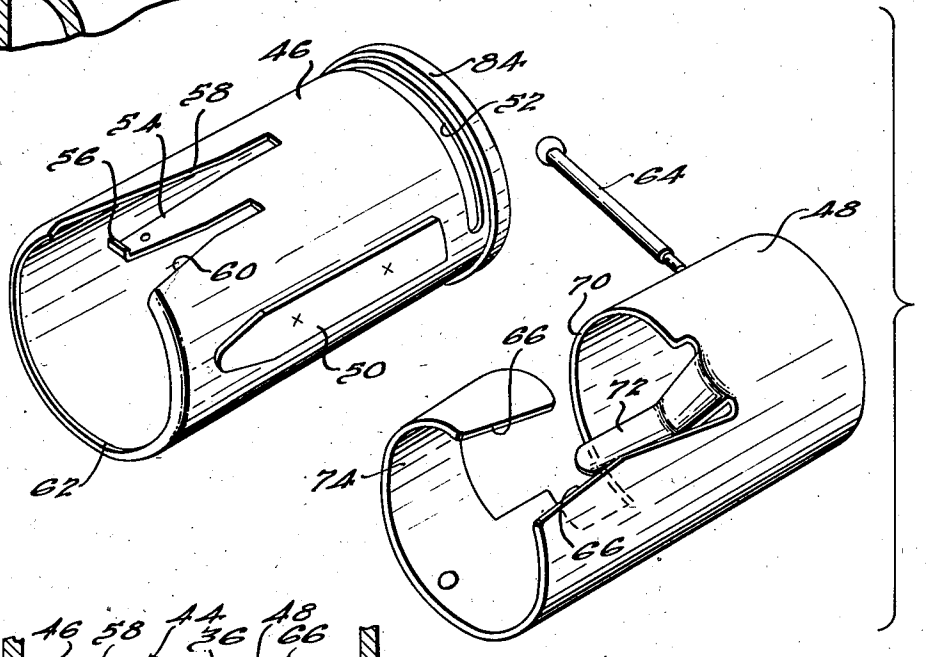


FIG. 4.

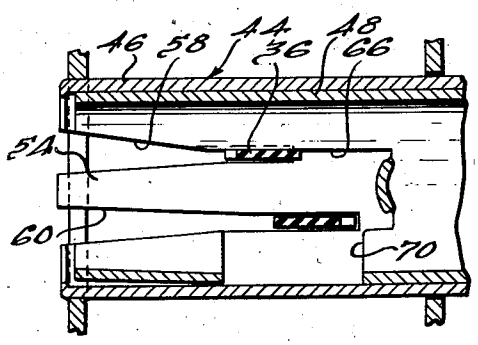


FIG. 5.

INVENTORS.
George D. Jaquith,
BY Keith N. Elliott.
Edwin J. Ballyff
ATTORNEY

Patented Nov. 21, 1944 2,363,002

UNITED STATES PATENT OFFICE

2,363,002

VACUUM CLEANER CONSTRUCTION

George D. Jaquith and Keith N. Elliott, Minneapolis, Minn., assignors to Eureka Vacuum Cleaner Company, Detroit, Mich., a corporation of Michigan

Application September 17, 1940, Serial No. 357,148

29 Claims. (Cl. 15—9)

This invention relates to converter tool attachments for vacuum cleaners.

A principal object of the invention is to provide a new and improved form of converter tool attachment for a vacuum cleaner.

Another object of the invention is to provide a converter tool attachment for a vacuum cleaner which is adapted to break the communication between the suction creating means of the vacuum and the nozzle and also to break the driving connection between the driving means and the surface covering agitator or surface cleaning member.

Another object of the invention is to provide a means which will enable a floor type vacuum cleaner to be converted into a suction cleaner more expeditiously than the devices heretofore available for this purpose.

Other objects and advantages of the invention will be apparent from a consideration of the following specification taken in conjunction with the accompanying drawings of which there are two (2) sheets and wherein:

Fig. 1 is a vertical longitudinal sectional view through a portion of a suction cleaner now available on the market:

Fig. 2 is a fragmentary sectional view illustrating the relationship between the converter tool attachment and the vacuum cleaner when the attachment is first inserted in the cleaner;

Fig. 3 is a cross-sectional view taken along the line 3—3 of Fig. 2;

Fig. 4 is an exploded view of the converter tool attachment with the parts of the same in inverted position;

Fig. 5 is a horizontal sectional view taken along the line 5—5 of Fig. 2;

Fig. 6 is a fragmentary view similar to Fig. 2 and illustrating the relationship of the converter tool attachment to the cleaner with the belt drive disconnected and with the suction to the floor-engaging nozzle cut off;

Fig. 7 is a vertical section taken along the line 7—7 of Fig. 6; and

Fig. 8 is a horizontal section taken along the line 8—8 of Fig. 6.

Referring now to Fig. 1, there is illustrated a portion of a vacuum or suction cleaner of a type now available on the market and which consists of a casing 10 having a motor chamber 12, a fan chamber 14 and a nozzle 16, the casing being supported for movement over the floor upon a plurality of wheels such as 18 adjustably mounted upon a shaft 20 so that the clearance between the mouth 22 of the nozzle and the surface upon which the wheels move may be adjusted. An electric motor 24 is arranged in the motor chamber and has affixed to the shaft 26 thereof and within the fan chamber 14 a fan 18 which, together with the chamber, comprises a suction creating means. The wall 28 between the fan chamber 14 and the nozzle 16 is provided with a central circular opening 30 about the shaft 26 for admitting air from the nozzle 16 to the fan chamber. From the fan chamber the air is discharged into a suitable dust collecting receptacle. The nozzle 16 is provided with a surface covering agitator or surface cleaning member such as a rotary brush 32, the brush being mounted for rotation about its axis within the lower portion of the nozzle 16 and so that upon rotation of the brush 32 the bristles 34 thereof will project through the mouth 22 of the nozzle and engage the surface covering to be cleaned. The motor shaft 26 projects into the upper part of the nozzle 16, and a belt 36 passing over suitably formed parts of the shaft 26 and brush 32 is adapted to provide a driving connection between the same for driving the brush upon operation of the motor 24. Opposite the shaft the forward wall of the nozzle 16 is provided with a circular opening 38 normally covered by a plate 40 which is removably secured in the position illustrated by spring catches 42 which engage the edge of the opening 38.

When the machine is used for cleaning surface coverings on the floor, the brush 32 is rotated, and the suction creating means induces a flow of air into the machine through the mouth 22, carrying with it the dirt picked up from the surface being cleaned and including that dislodged by the rotation of the brush 32. When it is desired to use the machine for suction cleaning, the plate 40 is removed and the converter tool attachment indicated generally at 44 is inserted in the opening 38. The parts of the converter tool attachment are shown in the exploded position shown in Fig. 4 and consist of an outer sleeve 46 and an inner sleeve 48 arranged for a limited relative rotation therebetween. The outer sleeve 46 at its sides is provided with guides 50 which slide within complementary formed channels 51 provided in the front wall of the nozzle 16. The sleeve 46 is formed with a peripheral slot 52 and is cut away so as to provide a finger 54 which has the latch 56 formed on the end thereof. The slots 58 and 60 provided in the wall of the sleeve 46 are adapted to accommodate the belt 36, when the sleeve is inserted into the cleaner to a position as illustrated in Fig. 2. In this position

it will be observed that the inside end 62 of the sleeve 46 projects within the circular opening 30 and that the outer periphery of the sleeve 46 adjacent the end 62 thereof seats on the edge of the opening 30 and has a fairly close fit therewith. The finger 54, it will be observed, referring to Fig. 2, is provided with a set so that the latch 56 will clear the edge of the opening 30 when the attachtment is inserted into the cleaner. The opening 30 is circular in form, as is the sleeve 46, and the finger 54 preferably is bent at its extremity toward the axis of the sleeve so that when the parts of the attachment are in the position illustrated in Fig. 2, the latch 56 will clear the edge of the opening 30.

The inner sleeve 48 is provided with a lever 64 which extends through the slot 52 and is arranged within the sleeve 46 so that the inner sleeve 48 may turn through approximately 180° of rotation with respect to the outer sleeve 46 which is held against rotation by the guides 50 and 51. The sleeve 48 at its inner end thereof is provided with an axially extending slot 66 which is adapted to accommodate the belt 36 when the attachment 44 is inserted within the cleaner. The sleeve 48 also is provided with a circumferentially extending slot 70 communicating at one end thereof with the slot 66, the slot 70 being adapted to accommodate the belt 36 when the sleeve 48 is rotated through its 180° of travel. A part of the sleeve 48 may be formed so as to provide a finger 72 which, when the attachment 44 is inserted within the port or opening in the wall of the cleaner, is adapted to project between the parts of the belt 36 and to be arranged just below the shaft 26.

When the inner sleeve is rotated through 180° of travel by means of the lever 64, the inner sleeve 48 will be arranged as illustrated in Fig. 6 wherein, it will be observed, the finger 72 holds the belt out of engagement with the end of the shaft 26, thereby breaking the driving connection between the shaft 26 and the brush 32. The horizontally arranged part of the finger 72 will, upon rotation of the sleeve 48, travel in an arc about the shaft 26 and will engage the belt at one side thereof and lift the same out of contact with the driving end of the shaft 26. The belt 36 preferably is constructed of rubber or other flexible material, so as to permit the foregoing action to take place. When the sleeve 48 is arranged as illustrated in Fig. 2, it will be observed that the slots 58 and 60 are open; i. e., they are not covered by a part of the sleeve 48, whereas, referring to Fig. 8, it will be observed that a part 74 of the sleeve 48 has closed off the slots 58 and 60 except for the inner ends thereof through which the belt 36 passes. In this way the communication between the nozzle 16 and the fan chamber 14 is substantially cut off, and also the driving connection between the shaft 26 and the brush 32 has been broken.

The part 74 of the sleeve 48 is shaped in the form of a cam so as to bias the finger 54 from the position in which it is illustrated in Fig. 2, to the position in which it is illustrated in Fig. 6, wherein the latch 56 overlaps the edge of the opening 30 for locking the converter tool attachment to the port 30. This latching action takes place simultaneously with the disengagement of the belt 36 from the drive shaft 26. The shape of the cam 74 may be seen in Figs. 3 and 7.

The finger 54 may be provided with a detent 80 engageable in a notch 82 formed in the end of the sleeve 48 for holding the sleeve 48 against accidental rotation relative to the sleeve 46. By reversing the rotation of the sleeve 48 relative to the sleeve 46, the finger 72 will be returned to the position illustrated in Fig. 3, and the latch 56 will be disengaged so that the attachment 44 may be removed from the cleaner.

As previously pointed out, the attachment 44 operates to cut off the suction at the mouth of the nozzle 22 and at the same time disconnects the brush 32 from its driving means. When the parts are arranged in Fig. 6, the suction created by the fan 18 is imparted through the attachment 44 to cleaning or dusting tools which may be suitably connected to that part of the attachment 44 which projects forwardly of the nozzle 16. The end of the sleeve 46 may be provided with a shoulder 84 which forms a part of the coupling by means of which the suction or cleaning tools may be connected to the attachment 44.

While the invention has been described with some detail, it is to be understood that the description is for the purpose of illustration only and is not definitive of the limits of the inventive idea. The right is reserved to make such changes in the details of construction and arrangement of parts as will fall within the purview of the attached claims.

We claim:

1. A converter attachment for a suction cleaner having a driving motor, suction creating means driven by said motor, a surface cleaning member, a driving connection between said motor and said member for actuating the latter during operation of said motor, said cleaner being provided with an air intake port communicating with said suction creating means and having coupling means associated therewith, both said driving connection and port being on the same side of said motor, and a floor nozzle operatively connected to said port and having said surface cleaning member operatively associated therewith: said converter attachment comprising a hollow member adapted to be connected with said port in air conducting relationship therewith and provided with coupling means which are cooperable with the aforesaid coupling means for detachably holding said attachment in operative position with respect to said port, a manually operable device carried by said attachment and movable relative thereto for rendering said coupling means operative, and means actuated by said device, carried by said attachment and directly cooperable with a part of said driving connection for breaking and remaking said driving connection between said motor and said member, said hollow member of said converter attachment having provision for connecting a suction cleaning tool thereto and being adapted when connected to said port, to obstruct the operative connection between said port and said floor nozzle.

2. A converter attachment for a suction cleaner having a driving motor, suction creating means driven by said motor, a nozzle communicating with said suction creating means and having a surface cleaning member associated therewith, and a driving connection between said motor and said member for actuating the latter, said cleaner being provided with an air intake port communicating with said nozzle and suction creating means and through which said driving connection extends between said motor and said surface cleaning member: said converter attachment being adapted to be arranged in air conducting relationship with said port and when so arranged

to obstruct the communication between said nozzle and said suction creating means, said attachment forming an air conducting member and having provision for connecting a suction cleaning tool thereto, the side wall of said attachment being formed to provide an opening through which said driving connection extends when said attachment is connected with said port, said attachment being provided with means on said air conducting member which are cooperable with said driving connection for selectively breaking and remaking the same while said attachment is in air conducting relation with said port.

3. A converter attachment for use with a suction cleaner having a driving motor, suction creating means driven by said motor, a nozzle communicating with said suction creating means and having a surface cleaning member associated therewith, and a driving connection between said motor and said member for actuating the latter, said cleaner being provided with a port communicating with said nozzle and suction creating means: said converter attachment being adapted to be seated on said port in air conducting relationship therewith by movement in the direction in which air flows through said port to obstruct the communication between said nozzle and said suction creating means, guide means formed on said cleaner and on said attachment which are cooperable for guiding said attachment upon movement toward its seat on said port, and which prevent relative rotation between said cleaner and said attachment, said attachment forming an air conducting member and having provision for connecting a suction cleaning tool thereto, and said attachment being provided with relatively movable means inside of said air conducting member which are cooperable with said driving connection for breaking the same while said attachment is in air conducting relation with said port.

4. A converter attachment for use with a suction cleaner having a driving motor, a fan driven by said motor, a surface cleaning nozzle communicating with said fan and having a mouth and a surface cleaning member associated therewith, and a driving connection between said motor and said member for actuating the latter during operation of said motor, said cleaner being provided with an air intake port affording communication between said fan and nozzle and having coupling means associated therewith, said port extending across every line of air flow between the mouth of the nozzle and the axis of said fan: said converter attachment comprising a hollow air conducting member adapted to be connected with said port in air conducting relationship therewith and having coupling means which are cooperable with the aforesaid coupling means for detachably holding said attachment in operative position with respect to said port, said attachment being formed so as to have a part of said driving connection arranged within and extending through the wall of said air conducting member when connected to said port, said attachment being constructed and arranged so as to close the communication between said nozzle and said fan around said driving connection, and means associated with said attachment and cooperable with said driving connection for breaking the same when said attachment is connected with said port in air conducting relationship therewith.

5. A converter attachment for use with a suction cleaner having driving means including a shaft member and suction creating means driven thereby, a surface cleaning member, a belt drive between said members for driving said cleaning member, said cleaner being provided with a port communicating with said suction creating means and through which said shaft member extends: said converter attachment being adapted to be connected with and disconnected from said port and said cleaner, said converter being constructed and arranged so as to form at least part of a conduit for the flow of air from a suction cleaning tool to said port and into which conduit at least a part of said belt is arranged when said converter attachment is connected with said port in air conducting relationship therewith, and said attachment having means thereon, engageable with that part of said belt which is arranged in said conduit when said attachment is connected to said port in air conducting relationship therewith, and operable for lifting said belt out of driving relationship with one of said members.

6. A converter attachment for use with a suction cleaner having driving means including a shaft member and a fan driven thereby, a surface cleaning member, a belt drive between said members for driving said cleaning member, said fan being provided with an air port concentric with the axis thereof: said converter attachment having one end thereof formed to seat on said port in air conducting relationship therewith and being adapted to be connected with and disconnected from said port by movement in a direction parallel to said shaft member, and said attachment being provided with means therein cooperable with said belt drive for lifting the belt thereof out of driving relationship with one of said members when said attachment is in air conducting relationship with said port.

7. For use with a suction cleaner having driving means, suction creating means driven thereby and provided with an air intake port, a nozzle communicating through said port with said suction creating means and having a surface cleaning member associated therewith, a driving connection including a belt between said driving means and said member for driving the latter during operation of said driving means, both said driving connection and port being on the same side of said driving and suction creating means, said nozzle being provided with a normally closed converter port: a converter attachment comprising a hollow air conducting member adapted through said converter port to be arranged in air conducting relationship with said air intake port for connecting suction cleaning tools with said suction creating means, said attachment being constructed so as to be readily detachably connectable with and disconnectable from said cleaner, a part of said attachment being cooperable directly with said belt of said driving connection for rendering the same inoperative and operative, said attachment having a part thereof arranged exteriorly of said cleaner having provision for connecting a suction cleaning tool thereto.

8. A converter attachment for a suction cleaner having driving means, suction creating means driven thereby and provided with a port, a floor nozzle communicating with the port and having a surface cleaning member associated therewith, a part of said nozzle being adapted to be covered by a removable plate, a shaft connected to said driving means and extending through said port into a part of said nozzle, a belt

drive between said shaft and said surface cleaning member: said converter attachment comprising a pair of sleeves telescopically arranged and the inner one of which is adapted to have a limited rotation relative to the outer one, said attachment being adapted to be arranged in air conducting relationship with the port in said suction creating means when said plate is removed, said sleeves having portions thereof cut away for accommodating the belt upon arrangement of said attachment in air conducting relation with said port and one of said sleeves being provided with means engageable with said belt for disconnecting the same from said shaft upon rotation of said inner sleeve with respect to said outer sleeve, said attachment projecting from the cleaner and being provided with means for attaching a suction cleaning tool thereto.

9. For a suction cleaner having suction creating means having an inlet port, driving means therefor, a nozzle having a surface cleaning member associated therewith and connected with said suction creating means through said inlet port, a belt forming a drive between said driving means and said surface cleaning member: a means for breaking the communication between said nozzle and said suction creating means and for disengaging said belt drive comprising a tubular member open at both ends and adapted to have one of its ends seated on said port to obstruct a part of the nozzle for shutting off the communication between the same and the suction creating means, said tubular member being adapted to have said driving means and a part of said belt arranged therein, said tubular member being provided with a part therein which is directly engageable with said belt and which upon movement thereof is adapted to lift the belt out of driving relationship with its driving means, said tubular member, on the other end thereof, which projects through the nozzle of said cleaner, being provided with coupling means for attaching a suction cleaning tool thereto and being constructed and arranged to form at least part of a conduit for the flow of air from said suction cleaning tool to said suction creating means.

10. For a suction cleaner having driving means, suction creating means driven thereby and having a port, a floor nozzle communicating with said port and having a surface cleaning member associated therewith, a shaft connected with said driving means and extending through said port into a part of said nozzle, and a belt forming a drive between said shaft and said surface cleaning member: an attachment comprising a sleeve adapted to be connected to and disconnected from said port and cleaner without disturbing said nozzle or said belt drive and operable for breaking the communication between said nozzle and said suction creating means, and means arranged on said sleeve, engageable with a part of said belt and operable for lifting the same out of driving relationship with said shaft, said sleeve at its outer end having provision for connection with a suction cleaning tool and forming at least part of a conduit for the flow of air from said suction cleaning tool to said port.

11. A converter attachment for a suction cleaner having driving means, suction creating means driven thereby and having a port, a floor nozzle communicating with said port and having a surface cleaning member associated therewith, a shaft connected with said driving means and extending through said port into a part of said nozzle, a belt forming a drive between said shaft and said surface cleaning member: said attachment comprising a sleeve adapted to be connected to and disconnected from said port and cleaner and operable when connected to said port for breaking the communication between said nozzle and said suction creating means, means arranged within said sleeve and engageable with said belt for lifting the same out of driving relationship with said shaft, said sleeve at its outer end having provision for connection with a suction cleaning tool, and means for connecting said sleeve to said cleaner so as to prevent the accidental displacement of the sleeve from said port, said sleeve being formed so that it may be connected to and disconnected from said port without disconnecting said nozzle from the cleaner.

12. A converter attachment for a suction cleaner including driving means, suction creating means driven thereby and provided with a port, a nozzle communicating with said port and having a surface cleaning member associated therewith, a shaft connected with said driving mechanism, a belt drive between said shaft and said cleaning member: said converter attachment being adapted to be connected with said port for breaking the communication of said nozzle therewith and for disengaging said belt from said shaft and comprising an outer sleeve adapted to have one end thereof seated on said port in air conducting relationship therewith, said attachment having a latch engageable with a part of said cleaner for holding said sleeve against accidental displacement, said sleeve being adapted to telescope said shaft and having axially extending slots formed in the wall thereof for accommodating said belt when the end of said sleeve is seated on said port, said attachment further including an inner sleeve rotatably mounted within the outer sleeve and provided with means for engaging the belt for lifting the same out of engagement with said shaft, said inner sleeve being provided with an axially extending slot and with a circumferentially extending slot communicating at one end thereof with said axially extending slot for accommodating said belt, a part of said inner sleeve being adapted to overlie the slots in the outer sleeve when said belt is held out of engagement with said shaft, means actuated by movement of said inner sleeve cooperable with said latch for engaging and disengaging the same from said part of said cleaner, and a detent arranged between said sleeves for holding the inner sleeve against movement when the belt is disengaged from said shaft and said outer sleeve is latched to the cleaner.

13. For connecting suction cleaning tools with a suction cleaner having driving means, suction creating means driven thereby and provided with an air intake port, a nozzle communicating with said port and having a surface cleaning member associated therewith, a shaft connected with said driving means and projecting through said port at the center thereof into said nozzle, said nozzle being provided with a normally closed converter port, said shaft forming part of a driving connection extending through said nozzle and between said driving means and said cleaning member for actuating the latter during operation of said driving means: a converter attachment adapted to be removably inserted in said converter port and operable for breaking the communication between said nozzle and said air intake port and the driving connection between said shaft and said cleaning member, said converter attachment

comprising an air conducting coupling member adapted to have one end thereof arranged in air conducting relationship with said air intake port and when so arranged to break the communication between said nozzle and said air intake port, means carried by said coupling member and positioned offcenter relative to said shaft when the converter is arranged in air conducting relationship with said air intake port, said last-mentioned means being engageable with a torque transmitting part of said driving connection for disconnecting such torque transmitting part from said driving means for breaking said driving connection between said driving means and said surface cleaning member, said converter attachment when arranged in operative position in said converter port having a part of said attachment projecting from the cleaner through said converter port, said projecting part of said attachment having provision for connection with a suction cleaning tool.

14. For use with a suction cleaner having driving means, suction creating means driven thereby, a nozzle communicating with said suction creating means and having a surface cleaning member associated therewith, a driving connection including a belt between said driving means and said member for actuating the latter during operation of said driving means, said cleaner being provided with a port communicating with said suction creating means and arranged on the same side of said driving means as said driving connection: a converter attachment adapted to be arranged in air conducting relationship with said port by movement in the direction in which air flows through said port and to shut off the communication between said nozzle and said suction creating means, and manually operable movable means carried by said attachment and directly cooperable with said belt of said driving connection for disengaging and engaging the same.

15. For use with a suction cleaner having a driving motor, suction creating means driven by said motor, a surface cleaning member, a driving connection between said motor and said member for actuating the latter during operation of said motor, said cleaner being provided with an air intake port communicating with said suction creating means and having coupling means associated therewith, both said driving connection and port being on the same side of said motor, and a floor nozzle operatively connected to said port and having said surface cleaning member operatively associated therewith: a converter attachment comprising a hollow member adapted to be connected with said port in air conducting relationship therewith and provided with coupling means which are cooperable with the aforesaid coupling means for detachably holding said attachment in operative position with respect to said port, a manually operable device carried by said attachment and movable relative thereto for rendering said coupling means operative, and means actuated by said device, carried by said attachment and directly cooperable with a part of said driving connection for breaking and remaking said driving connection between said motor and said member, said hollow member of said converter attachment having provision for connecting a suction cleaning tool thereto and when connected to said port, being adapted to shut off the operative connection between said port and said floor nozzle, and a latch for holding said manually operable device in position where said driving connection is broken.

16. A converter attachment for operatively connecting suction cleaning tools with a suction cleaner having driving means, suction creating means driven thereby, an air intake port communicating with said suction creating means, a nozzle having a substantially unobstructed air flow communication with said suction creating means through said port and a normally closed converter opening, a shaft driven by said driving means and extending through said port in spaced relationship with the edges thereof into said nozzle, a surface cleaning member associated with said nozzle and a belt forming at least part of a driving connection which is arranged in said nozzle and which extends between said shaft and said member for actuating the latter during operation of said driving means, both said belt and shaft being arranged in spaced relationship with the walls of said nozzle: said converter attachment comprising a hollow air conducting member adapted to be inserted through said converter opening into said nozzle and seated therein so as to form at least part of a conduit for the flow of air from a suction cleaning tool to said port, said converter attachment being adapted to traverse the path of said driving connection and having a part of the walls thereof cut away for accommodating said driving connection so as to permit said converter attachment to be inserted through said converter opening into said nozzle and seated therein and have said driving connection extending through said cutaway part of said attachment, and a shiftable member carried by said attachment and movable relative thereto to a position to close that portion of the cutaway part of the walls of said attachment not occupied by said driving connection so as to shut off said communication between said port and nozzle.

17. A converter attachment for use with a suction cleaner having driving means, suction creating means driven thereby, a port communicating with said suction creating means, a nozzle having a substantially unobstructed air flow communication with said suction creating means through said port, a shaft driven by said driving means and extending through said port in spaced relationship with the edge thereof, a surface cleaning member associated with said nozzle and a belt forming at least part of a driving connection between said shaft and said member: said converter attachment comprising a tubular air conducting member having one end thereof conforming to the shape of and adapted to be connected to said port by movement in the direction in which air flows through said port and when so connected to telescope the end of said shaft, said air conducting member being adapted to traverse the path of said belt and have a part of said belt arranged therein and transversely thereof when connected to said port, said air conducting member having a part of the walls thereof cut away for receiving said belt so as to permit said air conducting member to be connected with said port while said belt is connected with said shaft and so as to permit said belt to extend from one side of the wall of said air conducting member to the other, said tubular member when the same is connected with said port having its walls arranged substantially parallel with the axis of said port, and being adapted to close off the communication between said nozzle and said port.

18. A converter attachment for use with a suction cleaner having driving means, suction creat-

ing means driven thereby, a port communicating with said suction creating means, a nozzle having a substantially unobstructed air flow communication with said suction creating means through said port, a shaft driven by said driving means and extending into said communication, a surface cleaning member associated with said nozzle and a belt forming at least part of a driving connection which is arranged in said communication and which extends between said shaft and said member: said converter attachment comprising a hollow air conducting member adapted to be connected to said port in air conducting relationship therewith and for shutting off the communication between said nozzle and said suction creating means, said air conducting member having a part of the wall thereof cut away for receiving said belt so as to permit said air conducting member to be connected to said port with said belt extending through the wall of and from the interior to the exterior of said air conducting member, and a member carried by said attachment and movable to a position to obstruct that portion of the cutaway part of the walls of said air conducting member not occupied by said belt.

19. For a suction cleaner comprising a fan case having a centrally arranged inlet opening, a fan shaft having a fan rotatably mounted in said fan case, a suction nozzle having a floor engaging mouth operatively connected with the inlet opening of said fan case and having an opening providing for access to said inlet opening, an agitator mounted in the floor engaging mouth of said nozzle, a belt connecting the fan shaft with said agitator for driving the same during operation of said fan a removable converter coupling for attaching utility tools to said cleaner comprising a hollow air conducting member extended through the nozzle opening and adapted to traverse the path of said belt and have one end thereof seated within said inlet opening and including rotatable belt shifting means for lifting the belt free from the fan shaft.

20. A converter attachment for a vacuum cleaner having a driving motor, suction creating means driven thereby, a circular port communicating with said suction creating means, a floor nozzle communicating with said suction creating means through said port, a surface covering agitator operatively associated with the mouth of said nozzle and a driving connection including a belt and pulley between said motor and agitator for actuating the latter: said attachment comprising a coupling member having a cylindrical end adapted to be arranged on said port in air conducting relationship for obstructing the communication of said nozzle with said port and provision for connecting a suction cleaning tool to the other end thereof, means within said coupling member and engageable with said belt for lifting the same out of driving relationship with said pulley when said coupling member is associated with said port, and means for preventing the separation of said attachment from said cleaner when said belt is out of driving relationship with said pulley.

21. For a suction cleaner including a fan case having a centrally arranged air inlet opening, a fan shaft having a fan rotatably mounted in said fan case, a floor cleaning nozzle extending from the fan case and having a mouth operatively connected with said inlet opening and an opening providing for access to said inlet opening, an agitator mounted in the mouth of said nozzle, a belt connecting the fan shaft with said agitator for driving the same during operation of said fan a converter coupling for operatively connecting utility tools to the cleaner, said coupling comprising a tubular air conducting body portion extended through said nozzle opening with the end thereof seated in said inlet opening in air conducting relationship therewith, a tubular member rotatably mounted within said body portion and having belt shifting means associated therewith, and means for preventing the application of the converter coupling to the machine except when said belt shifting means is in proper alignment with respect to the belt.

22. For a suction cleaner including a fan case having a centrally arranged inlet opening, a fan shaft having a fan rotatably mounted in said fan case, a floor cleaning nozzle extending from the fan case and having a mouth operatively connected with said inlet opening and an opening providing for access to said inlet opening, an agitator mounted in the mouth of said nozzle, a belt connecting the fan shaft with said agitator for driving the same during operation of said fan, a converter coupling for operatively connecting utility tools to the cleaner, said coupling comprising a tubular air conducting body portion extended through said nozzle opening with the end thereof seated on said inlet opening in air conducting relationship therewith, a member mounted on and for movement relative to said body portion and having belt shifting means associated therewith, and means for preventing the end of said tubular body portion from being seated on said inlet opening except when said belt shifting means is in proper alignment with respect to said belt.

23. For a suction cleaner comprising a fan case having a centrally arranged inlet opening, a fan shaft having a fan rotatably mounted in said fan case, a suction nozzle having a mouth operatively connected with the inlet opening of said fan case and having an opening therein providing for access to said inlet opening, an agitator mounted in the floor engaging mouth of said nozzle, a belt connecting the fan shaft with said agitator for rotating the agitator during the operation of said fan; a removable converter coupling for attaching utility tools to said cleaner comprising a hollow air conducting member extended through the nozzle opening and adapted to traverse the path of said belt and have one end thereof seated within said inlet opening and including movable belt shifting means operable for lifting the belt free from the fan shaft, said converter coupling being provided with a member adapted, upon operation of said belt shifting means after said end of said coupling is seated in said inlet opening, to engage a part of said cleaner for removably securing said one end of said coupling within said inlet opening.

24. For a suction cleaner comprising a fan case having a centrally arranged inlet opening, a shaft having a fan rotatably mounted in said fan case, a suction nozzle having a mouth operatively connected with the inlet opening of said fan case and having an opening therein providing for access to said inlet opening, an agitator mounted in the floor engaging mouth of said nozzle, a belt connecting the fan shaft with said agitator for rotating the same during the operation of said fan; a removable converter coupling for attaching utility tools to said cleaner comprising a hollow member extended through the nozzle opening and adapted to traverse the path of said belt

and have one end thereof seated within said inlet opening and including belt shifting means within said hollow member operable for lifting the belt free from the fan shaft, and detent means operable for holding said belt shifting means against movement relative to said hollow member when said belt shifting means is in a position in which it is holding the belt free of the fan shaft.

25. For a suction cleaner comprising a fan case having a centrally arranged air inlet opening, a shaft having a fan rotatably mounted in said fan case, a suction nozzle having a mouth operatively connected with the inlet opening of said fan case and having an opening therein providing for access to said inlet opening, a surface cleaning member mounted in the floor engaging mouth of said nozzle, a belt connecting the fan shaft with said member for operating the same during the operation of said fan: a removable converter coupling for attaching utility tools to said cleaner comprising a hollow member extended through the nozzle opening and adapted to traverse the path of said belt and have one end thereof seated within said inlet opening and including belt shifting means within said hollow member operable for lifting the belt free from the fan shaft, detent means operable for holding said belt shifting means against movement relative to said hollow member when said belt shifting means is in a position in which it is holding the belt free of the fan shaft, and means operable to prevent movement of said converter coupling relative to said cleaner while the belt shifting means is holding the belt free of the fan shaft.

26. For a suction cleaner having a motor, a fan driven thereby and provided with an air inlet port, a nozzle communicating with said fan through said port and having a surface cleaning member associated therewith, a shaft driven by said motor and forming part of a driving connection between said motor and said cleaning member for actuating the latter during operation of said motor, said driving connection extending through said port: a converter attachment adapted to be arranged in air conducting relationship with said port for breaking the communication of said nozzle therewith and for breaking said driving connection, said attachment comprising a sleeve adapted to traverse the path of said driving connection and to be connected to said port in air conducting relationship therewith, the wall of said sleeve having a portion thereof cut away for accommodating said driving connection when the end of said sleeve is seated on said port in air conducting relationship therewith, said attachment further including a member mounted on and movable relative to said sleeve, means which are cooperable with said driving connection for disengaging the same upon movement of said member relative to said sleeve, said member upon movement thereof being adapted to close that part of said cut away portion of said sleeve not occupied by said driving connection when said driving connection is broken.

27. For a suction cleaner comprising a fan case having a centrally arranged air inlet port, a suction nozzle having a mouth operatively connected with said port and having a converter opening providing for access to said port, a fan rotatably mounted in said fan case and having a shaft, an agitator mounted in the mouth of said nozzle, a belt connecting the fan shaft with said agitator for driving the same during operation of said fan: a removable converter coupling, for connecting suction cleaning tools with said fan air inlet port, comprising a hollow air conducting member extended through the converter opening and adapted to traverse the path of said belt and have one end thereof arranged in air conducting relation with said port and including belt shifting means operable for lifting the belt free from the fan shaft.

28. For a suction cleaner comprising a fan case having a centrally arranged air inlet port, a fan shaft having a fan rotatably mounted in said fan case and projecting through said air inlet port, a suction nozzle having a mouth operatively connected with the inlet port of said fan case and having a converter opening providing for access to said inlet port, an agitator mounted in the mouth of said nozzle, a belt in said nozzle connecting the fan shaft with said agitator for driving the same during operation of said fan: a removable converter coupling, for connecting suction cleaning tools with said fan air inlet port of said cleaner, comprising a hollow air conducting member which has provision for attaching a suction cleaning tool thereto, said converter coupling being constructed so that it may be removably seated in said converter opening, without disconnecting said belt drive, and form part of a passageway for conducting dirt laden air from said suction cleaning tool to said fan air inlet port during operation of said fan, said converter coupling further including means carried thereby and operable to engage said belt for lifting the same free from said fan shaft when said converter coupling is seated in said converter opening.

29. In combination with a suction cleaner having driving means, suction creating means driven thereby, an air intake port communicating with said suction creating means, a nozzle having a substantially unobstructed air flow communication with said suction creating means through said port and a normally closed converter opening, a shaft driven by said driving means and extending through said port and in spaced relationship with the edges thereof into said nozzle, a surface cleaning member associated with said nozzle and a belt forming at least part of a driving connection which is arranged in said nozzle and which extends between said shaft and said member for actuating the latter during operation of said driving means, a converter for operatively connecting suction cleaning tools to said cleaner, said converter comprising a hollow air conducting member adapted to be inserted through said converter opening into said nozzle and seated therein so as to form at least part of a conduit for the flow of air from a suction cleaning tool to said port and to shut off communication between said port and nozzle, said converter being adapted to traverse the path of said belt and having a part of the walls thereof cut away for accommodating said belt so as to permit said converter to be inserted through said converter opening into said nozzle and seated therein and have said belt extending through said cutaway part of said converter, and means engageable with said belt and operable for lifting the same out of driving relationship with said shaft.

GEORGE D. JAQUITH.
KEITH N. ELLIOTT.