Jan. 9, 1968 C. E. JACKSON 3,362,416

SMOKING PIPE CLEANER

Filed Oct. 23, 1965 2 Sheets-Sheet 1

FIG. 1.

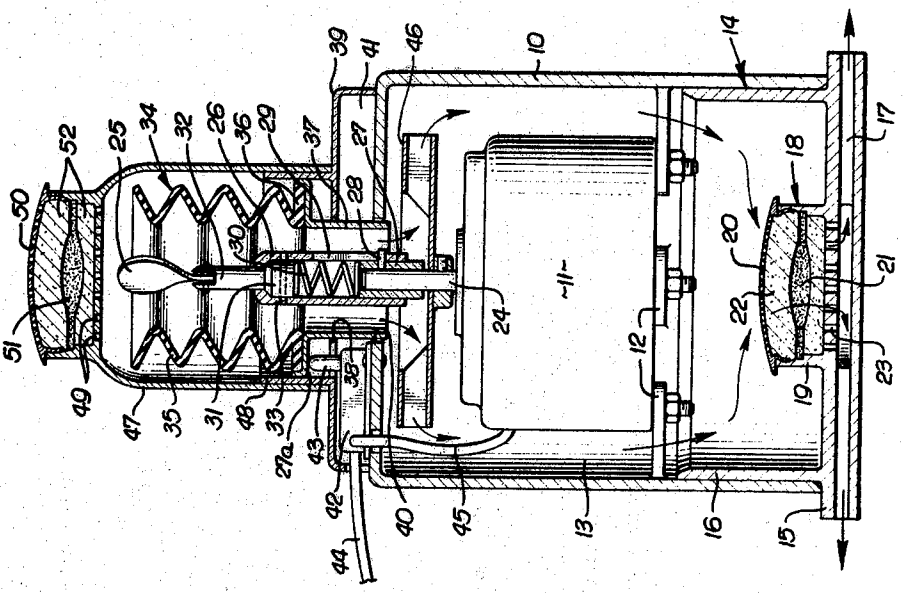
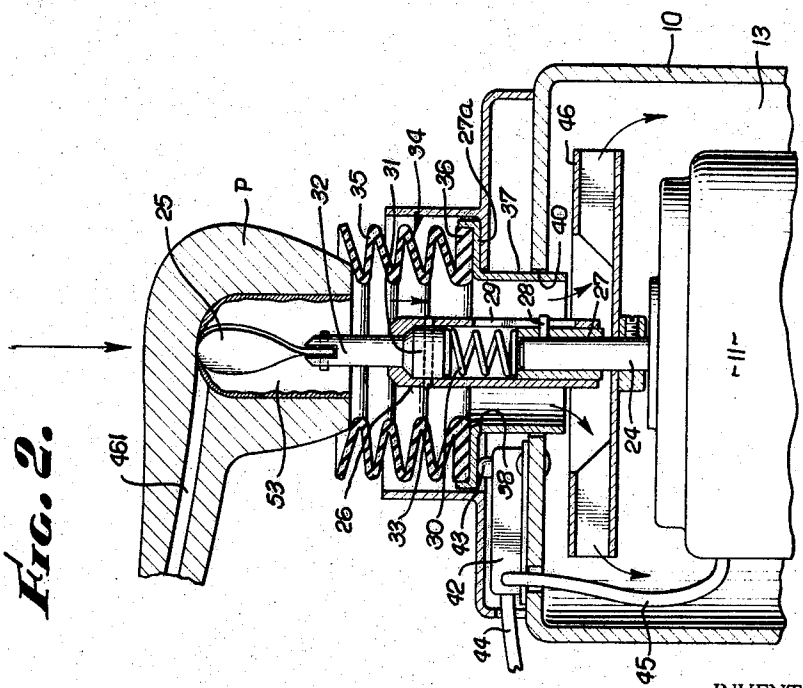


FIG. 2.



INVENTOR.
CLARK E. JACKSON
BY
White & Haefliger
ATTORNEYS.

Jan. 9, 1968 C. E. JACKSON 3,362,416

SMOKING PIPE CLEANER

Filed Oct. 23, 1965 2 Sheets-Sheet 2

FIG. 3.

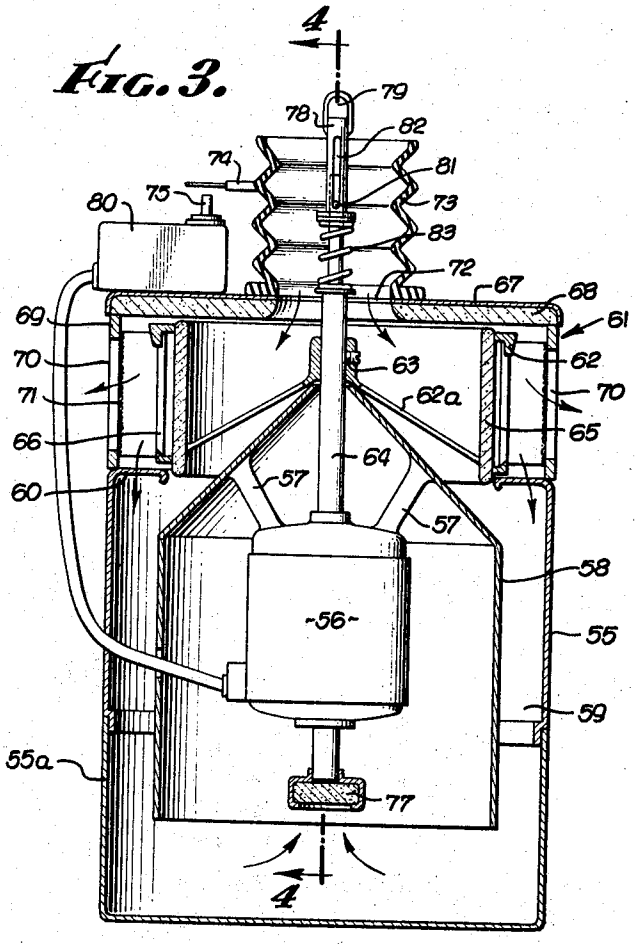
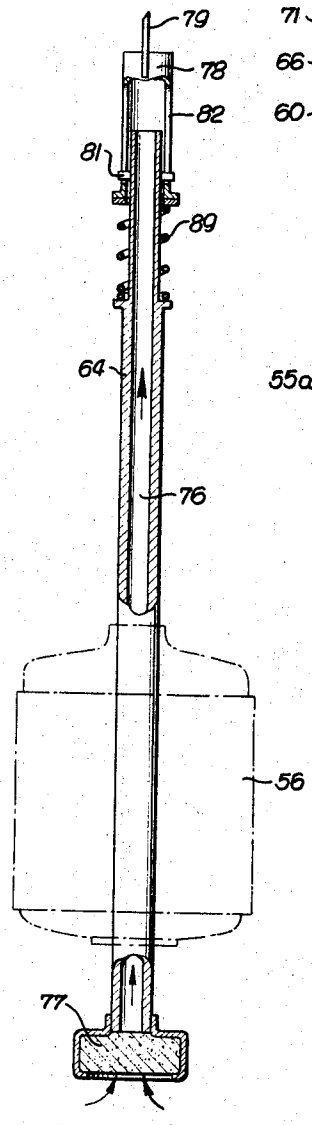


FIG. 4.



INVENTOR.
CLARK E. JACKSON
BY
White & Haefliger
ATTORNEYS.

United States Patent Office 3,362,416
Patented Jan. 9, 1968

3,362,416

SMOKING PIPE CLEANER

Clark E. Jackson, Rolling Hills, Calif., assignor to Purex Corporation Ltd., Lakewood, Calif., a corporation of California

Filed Oct. 23, 1965, Ser. No. 503,472
15 Claims. (Cl. 131—232)

This invention relates to improvements in mechanized smoking pipe cleaners of a general type comprising a motor-containing ash receptacle above which projects a reamer over which the pipe bowl is pressed to ream out its cake and allow the cuttings or ash to be taken into the receptacle.

As is well known, the ash reamed from smoking pipes is objectionably odorous in open exposure, and is unsightly and otherwise troublesome when deposited in the usual trays. As to the pipe itself, ordinary hand reaming of the bowl cake often is unsatisfactory because of lack of uniformity in removal of the cake, tendency to produce clogging in the stem, and inconvenience in disposal of the removed ash.

The invention has for its general object to provide a mechanical reamer of the character indicated, which affords various advantages and convenience in accomplishing fast and uniform reaming of the cake, continuous removal of the severed ash, and entrapment of the ash in a manner eliminating objectionable odor.

A major object of the invention is to provide in conjunction with the reamer a surrounding shroud to which the pipe bowl is applied, the shroud being downwardly displaceable as the reaming progresses to entrap and direct the cuttings into the receptacle below.

A further object is to provide a downwardly displaceable reamer yieldably resisted to govern or influence the effective reaming pressure, and movable in conjunction with the shroud so that together the reamer and shroud sever and confine the cuttings throughout full reaming of the pipe bowl.

The invention also contemplates creation of air flow from the reamer to carry the cuttings as they are formed down through the duct into the receptacle, as by a fan contained in the receptacle and driven by the reamer motor. As to the motor and fan operation, the invention provides for switch means responsive to predetermined displacement of the shroud to start the motor, and in a manner starting the reamer into operation before it is subjected to possibly stalling pressure against the cake.

The ash odor problem is solved both by initial confinement of the ash going to collection in the receptacle, and by deodorizing air emitted from the receptacle to the atmosphere. Provision is made for venting ash-free air from the receptacle and by contacting such air with deodorizing means such as one or more sachets over or through which the air passes before release.

The invention has various additional features and objects, all of which together with those outlined above, will be understood from the following detailed description of illustrative embodiments of the invention shown by the accompanying drawings, in which:

FIG. 1 is a view showing one embodiment of the invention in vertical section;

FIG. 2 is an enlargement of the upper portion of FIG. 1 showing a smoking pipe applied to the reamer with the shroud depressed;

FIG. 3 is a view similar to FIG. 1 illustrating a variational embodiment of the invention; and

FIG. 4 is a fragmentary sectional showing of the tubular motor driven shaft in FIG. 3.

Referring first to FIGS. 1 and 2, the device is shown to comprise a housing **10** containing a motor **11** suitably mounted as upon the circularly spaced housing lugs **12**,

the housing being annularly spaced at **13** about the motor to provide for downward air passage into the ash receptacle generally indicated at **14**. The latter is shown to comprise a flanged base **15** and an upper member **16** having a friction fit within the housing, the base **15** having one or more air outlet passages **17** through which air escapes from the receptacle through a suitable deodorizing means generally indicated at **18**. Such means may comprise a cup **19** covered by perforated cap **20** and containing a perfumed sachet **21** confined within suitable porous filtering media **22**, the sachet serving as a deodorant for the air escape through apertures **23** to passages **17**.

The motor shaft **24** rotatably drives a suitable reamer shown typically as having the form of a blade **25**, by way of sleeve **26** carrying bearing **27** fixed to the motor shaft, the bearing being keyed to sleeve **26** by pin **28** projecting into the sleeve slot **29**. Downward displacement of the reamer is yieldably resisted by coil spring **30** bearing against head **31** of the reamer shaft **32**, the head being fixed to the sleeve **26** by pin **33**. By reason of this spring loaded mounting, the reamer is downwardly displaceable relative to the motor shaft under pipe bowl applied pressure as will appear.

An axially displaceable shroud generally indicated at **34** is mounted upon the motor housing to extend concentrically about the reamer. While capable of embodiment in any of different forms permitting downward displacement of at least the upper extent of the shroud, the latter is shown to comprise an axially elastic bellows **35** having a base flange **36** received within tubular retainer **37** extending downwardly through opening **38** in the hollow cover **39**, and through opening **40** in the top of the housing **10**. Space **41** within the cover **39** contains a switch **42** of suitable type having a normally upwardly urged actuator **43** engaged against the underside of the bellows retainer flange **27***a*. The switch **42** connects the electrical power leads **44** with leads **45** going to the motor **11**. In the FIG. 1 which shows the raised position of the actuator **43**, the switch is opened to interrupt current feed to the motor.

The motor shaft **24** mounts a fan **46** in the form of a suction impeller which during operation of the motor draws air downwardly through the bellows shroud and retainer **37** into the motor chamber **13**, the fan thence operating to discharge the air downwardly about the motor and through deodorizing device **18** as previously explained.

If desired, the reamer and shroud may be enclosed when the device is not in use, as by a cap **47** fitted to extension **48** of the cover **39**, this extension also serving to stabilize lateral displacement of the bellows and its retainer. Odors tending to escape from the device through apertures **49** through perforated closure **50**, are perfumed by a sachet **51** accommodated within porous filtering material **52**.

In considering the operation of the cleaner, assume the parts to be positioned as in FIG. 1 with the cover **47** removed. Upon initial application of a pipe bowl **P** to the top of the bellows **35** as in FIG. 2, the reamer **25** is permitted only partial entry to a caked bowl cavity **53**. Bowl-applied pressure first displaces the bellows and its retainer **37** downwardly to close the switch **42** and thus start the motor and reamer into operation. Starting of the reamer most desirably occurs before its full entry into the bowl so as not to encounter any excessively heavy bowl cake before the motor brings the reamer to full speed. By continued light pressure upon the bowl, the bellows is progressively compressed and the reamer allowed to penetrate the bowl to the full depth of FIG. 2. Simultaneously the fan **46** induces air flow through

the bowl stem passage **461** to cool and dry the bowl and to sweep and entrain the cutting downwardly into the motor chamber **13** and ultimately into the receptacle, while preventing the deposition of loosened matter in the stem passage **461**. Upon release of the reamed out bowl from the bellows, the latter restores to the FIG. 1 position, being elevated by the switch actuator while stopping the motor.

The variational form of the invention shown in FIGS. 3 and 4 comprises, as before, a housing **55** containing motor **56** suitably supported as at **57** within a baffle chamber **58** annularly spaced at **59** from the outer housing. Above its in-turned apertured flange **60** the housing mounts a fan and filter assembly generally indicated at **61**, comprising a rotor **62** having arms **62***a* fixed at **63** to the motor shaft **64**, the rotar carrying an annular porous filter **65** at the inside of fan blades **66**. The assembly **61** includes a cover **67** having suitable porous filter lining **68** supported on an annular shell **69** having openings **70** at the outside of an annular screen **71**.

The cover **67** mounts a switch **80** corresponding to switch **42** in FIG. 1, and also supports about central aperture **72** an elastic bellows **73** carrying an arm **74** engageable downwardly against the switch actuator **75**.

As best illustrated in FIG. 4, the motor shaft **64** is tubular to provide a passage **76** into which air enters through filter **77** on the bottom end of the shaft. At its upper end the shaft mounts sleeve **78** carrying the reamer **79**, downward displacement of the sleeve relative to the motor shaft being resisted by spring **83** and the sleeve being keyed to the shaft for rotation therewith by the shaft pins **81** projecting into the sleeve slots **82**.

In a pipe cleaning operation, initial application of the bowl to the top of the bellows **73** displaces the latter downwardly, causing arm **74** to depress the actuator **75** and start the motor in operation. Cuttings from the bowl are entrained in the air stream being induced downwardly through the bellows to pass between arms **62***a* of the rotor and downwardly through space **59** for collection in the separable receptacle section **55***a* of the housing. A portion of the induced air escapes to atmosphere through the filter **65** and screen **71**. The filter may be perfumed or otherwise treated to deodorize the escaping air. The remaining air being displaced downwardly through space **59** enters the motor shaft through filter **77** and is discharged upwardly through the motor shaft passage **76** ultimately to be jetted through the sleeve **78** into the pipe bowl, thus to aid in sweeping out and into the shroud the cuttings as they are formed.

I claim:

1. A smoking pipe cleaner comprising,

(A) an ash receptacle,

(B) a motor in the receptacle,

(C) a pipe reamer above the receptacle,

(D) means connecting the reamer to the motor for rotation thereby,

(E) a vertically extending tubular shroud surrounding the reamer and engageable at its upper end by a pipe to be reamed, said shroud being communicable with the interior of the receptacle and the pipe-engaged portion of the shroud being downwardly displaceable by pipe-applied pressure as the reaming progresses.

2. A pipe cleaner according to claim **1**, including means mounting the reamer to be downwardly displaceable by an applied pipe.

3. A cleaner according to claim **1**, including also means for inducing air flow downwardly through the shroud into the receptacle.

4. A cleaner according to claim **1**, in which said shroud is of an axially deformable bellows configuration.

5. A cleaner according to claim **2**, in which said reamer mounting means comprises a coupling interconnecting the reamer and motor and including yielding means resisting downward displacement of the reamer.

6. A cleaner according to claim **2**, in which said shroud is axially and elastically deformable.

7. A cleaner according to claim **1**, including switch means operable in response to downward displacement of the shroud to energize and start the motor and reamer in operation.

8. A cleaner according to claim **7**, in which said switch means is so operable in response to an initially relatively small extent of the shroud displacement to start the reamer rotation at less than full entry of the reamer into the pipe bowl.

9. A cleaner according to claim **7**, including a suction fan in the receptacle and driven by the motor to induce air flow down through the shroud.

10. A cleaner according to claim **9**, including means for directing air flow from the receptacle upwardly to the reamer.

11. A cleaner according to claim **10**, in which said directing means includes an air passage extending within the motor shaft.

12. A cleaner according to claim **1**, in which said receptacle contains a fan operating to induce air flow downwardly through the shroud and to discharge air to atmosphere through an opening in the receptacle.

13. A cleaner according to claim **12**, including also means for deodorizing the air being discharged to atmosphere.

14. A cleaner according to claim **12**, in which the receptacle includes a removable ash receiver.

15. A cleaner according to claim **12**, including switch means operable in response to downward displacement of the shroud to energize and start the motor and reamer in operation.

References Cited

UNITED STATES PATENTS

1,052,759	2/1913	Sheperd	131—244
1,233,410	7/1917	Sheperd	131—244
1,651,651	12/1927	Warman	131—232
2,252,175	8/1941	Gordon	131—232
2,306,622	12/1942	Gordon	131—246
2,725,884	12/1955	Colby	131—246

FOREIGN PATENTS

1,381,338	11/1964	France.
594,653	7/1934	Germany.
322,707	12/1929	Great Britain.

SAMUEL KOREN, *Primary Examiner.*

JOSEPH S. REICH, *Examiner.*