March 23, 1965 W. MISSLER 3,174,487

APPARATUS FOR REMOVING TARS FROM TOBACCO SMOKE

Filed April 15, 1963

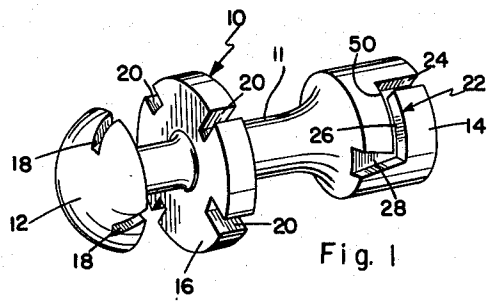


Fig. 1

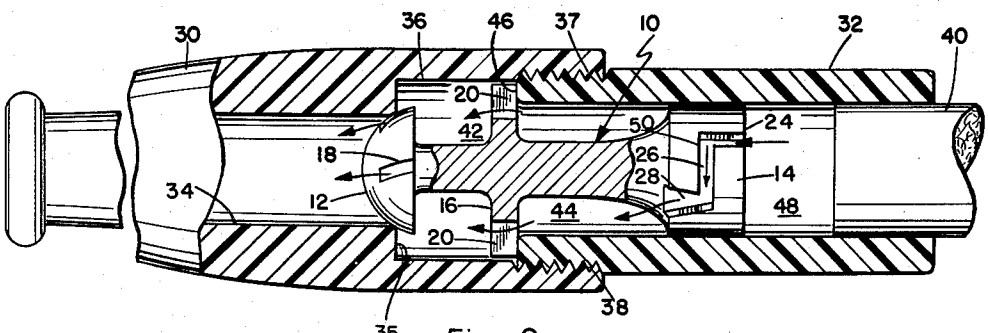


Fig. 2

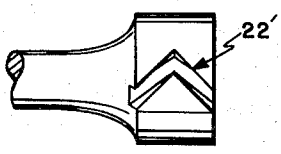


Fig. 3

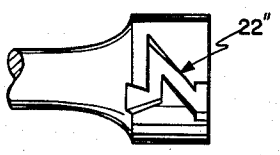


Fig. 4

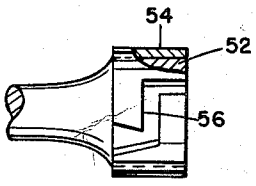


Fig. 5

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APPARATUS FOR REMOVING TARS FROM TOBACCO SMOKE

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This invention relates generally to tobacco smoking devices and particularly to a device for removing harmful tars and other precipitatable matter from tobacco smoke.

Background

Cigar and cigarette holders and filters for use in cigars, cigarettes, holders and pipes are well known in the art. Some of the disadvantages of prior art devices are removal of aromatic and taste qualities along with the unwanted tars, discharge of accumulated tar fluids into the smoker's mouth, frequent clogging of the smoke passages causes difficulty in drawing smoke through the device, and inaccessibility of clogged passages for cleaning.

The instant invention is a device for regulating the flow of tobacco smoke and removing harmful tars therefrom, said device being specifically designed to avoid the disadvantages of the prior art described above and to provide more complete removal of tars and other solid matter.

Objects

It is a principal object of this invention to provide a device that separates harmful tars from tobacco smoke.

It is still another object of this invention to provide a device that removes harmful tars without affecting the natural aromatic and taste qualities of tobacco smoke.

It is a further object of this invention to provide a tobacco smoke tar removal device that is simple in structure, may be manufactured cheaply, and requires no maintenance except periodic cleaning.

With these and other objects definitely in view, this invention consists in the novel combination and arrangement of elements as will be hereinafter fully described in the specification, particularly pointed out in the claim, and illustrated in the drawings that form a material part of this disclosure, and in which:

FIGURE 1 is a perspective view of the inventon;

FIGURE 2 shows an application of the invention installed in a cigar or cigarette holder;

FIGURE 3 is a fragmentary portion of the plug end, that is, the generally cylindrical portion of a baffle unit similar to that shown at the right hand end of FIGURE 1, showing a different channel configuration; and

FIGURE 4 is similar to FIGURE 3 with a different channel configuration;

FIGURE 5 is a fragmentary view, showing a modification of the plug end employing a sleeve with an angular channel therein installed on the plug end.

Similar characters of reference indicate similar or identical elements and portions throughout the specification and throughout the views of the drawing.

Detailed description

The instant invention comprises baffle unit **10** as illustrated in FIGURES 1 and 2. Baffle unit **10** has an elongated, solid, generally cylindrical spindle **11**, a hemispherical end **12**, a cylindrical plug end **14**, and an intermediate flange **16**, said spindle, ends and flange being unitary and coaxial. Slots **18**, parallel with the baffle unit longitudinal axis, are equally spaced in the periphery of the hemispherical end **12**, and similar slots **20** are equally spaced in the periphery of flange **16**. Angular grooved channel **22** in the periphery of plug end **14** is adapted to be laterally closed by the internal walls of the hereinafter

referred to chamber **44** and this channel **22** has a longitudinal inlet portion **24**, transverse intermediate portion **26**, and longitudinal, diverging outlet portion **28**. While angular, grooved channel **22** is shown as an integral part of cylindrical plug end **14**, to facilitate manufacture, plug end **14** could be reduced in diameter to fit into a sleeve containing the desired angular channel as illustrated in FIGURE 5. In FIGURE 5, plug end **52** of reduced diameter fits snugly in sleeve **54**. Sleeve **54** contains angular channel **56**. The outside diameter of sleeve **54** is the same as plug end **14**. Slots **18** and outlet portion **28** are staggered in longitudinal relationship to slots **20**. Baffle unit **10** preferably is constructed of metal, such as aluminum, but may be constructed of any other suitable material, such as plastic. The width, depth, and length of slots **18** and **20** and angular, grooved channel **22** may vary according to the specific use of baffle unit **10**.

In FIGURE 2, baffle unit **10** is shown installed in a cigar or cigarette holder of conventional design comprising mouthpiece **30** and tube **32**. Baffle unit **10** also may be installed in other smoking devices, such as a pipe stem.

Mouth piece **30** includes longitudinal duct **34**, enlarged socket **36**, and internal threads **37**. Tube **32** has external threads **38**, and is designed to fit snugly the end of a cigar or cigarette as shown at **40**.

When assembled a portion of hemispherical end **12** fits into duct **34**, abutting on planar annular shoulder **35** near the mouthpiece end of the holder, and slots **18** provide passageways between duct **34** and chamber **42**. Similarly, slots **20** in flange **16** provide passageways between chambers **42** and **44**, the solid structure of flange **16** fitting snugly with enlarged socket **36**. Shoulder **46** in tube **32** abuts flange **16**, keeping baffle unit **10** secured firmly in mouthpiece **30**, and cylindrical plug end **14** fits snugly in tube **32**, angular, grooved channel **22** providing a passageway between chamber **44** and space **48** in tube **32**. While only one angular, grooved channel **22** is shown, additional, similar channels may be disposed in the perimeter of plug **14**. Also, while, as illustrated in FIGURE 2, longitudinal inlet portion **24** and transverse intermediate portion **26** form a right angle, other angles and configurations for channel **22** may be used, such as illustrated in FIGURES 3 and 4. Preferably, the angle between inlet portion **24** and transverse portion **26** should be a right angle or an acute angle for maximum effectiveness as hereinafter described.

The effectiveness of baffle unit **10** in removing tars from tobacco smoke is determined primarily by the passage of smoke at high velocity through angular channel **22** and secondarily by the winding or tortuous path of the smoke through slots **20** and **18** as indicated by the arrows in FIGURE 2. Tobacco smoke drawn into space **48** enters inlet portion **24** and is accelerated to a high velocity by the reduced cross section of inlet portion **24**. The accelerated smoke then strikes confronting wall **50** of transverse intermediate portion **26**, causing the larger and heavier tar molecules to be precipitated from the smoke. The smoke then proceeds through transverse intermediate portion **26** and diverging, outlet portion **28** into chamber **44**. The precipitated tars flow by the same path into chamber **44**, the diverging outlet portion preventing accumulated tars from clogging channel **22**.

The tobacco smoke, with a high percentage of tars removed by the action described, disperses in chamber **44**, is accelerated by passage through slots **20**, disperses in chamber **42**, is accelerated by passage through slots **18**, and finally enters duct **34**. In passing from chamber **44** to chamber **42** and to duct **34**, the tobacco smoke strikes the solid structure of flange **16** and hemispherical end **12**, causing additional precipitation of tar molecules.

The tars precipitated by angular channel **22**, flange **16**,

and hemispherical end **12** are trapped in chambers **44** and **42** by the solid portions of flange **16** and hemispherical end **12** and prevented from entering duct **34**.

In passing from space **48** through duct **34** and the intervening passages, the smoke is cooled by contact with the surrounding structure. Thus the instant invention provides a cool, satisfying smoke with most of the harmful tars eliminated.

Location of the smoke passageways and the tar trapping chambers on the periphery of baffle unit **10** provides a useful feature in that the device is easily cleaned, there being no internal passageways to become clogged, such internal passageways also being hard to clean. Baffle unit **10** may be cleaned by wiping accumulated tars from the exterior surfaces with a rag or cleansing tissue. In case of hardened deposits, the unit may first be immersed in a cleaning fluid. The combined effect of the angular channel and staggered slots also provides removal of a greater proportion of harmful tars than in prior art devices.

It is understood that minor variation from the form of the invention disclosed herein may be made without departure from the spirit and scope of the invention, and that the specification and drawing are to be considered as merely illustrative rather than limiting.

I claim:

A cigarette holder having an inner mouthpiece end and an outer socket end adapted to receive one end of a cigarette, the cigarette holder having means providing a smoke duct extending longitudinally therethrough, the holder having a planar annular shoulder near the mouthpiece end, the plane of the shoulder extending transversely of the longitudinal axis of the holder and comprising the inner end of a cylindrical chamber extending outwardly of the holder from said shoulder to the outer end thereof, and a baffle unit adapted to be inserted into the chamber from the outer end thereof, the baffle unit including a solid cylindrical central core member having a diameter which is less than that of the internal diameter of the chamber, the outer end of the baffle unit including a solid cylindrical axial outer extension of said core and having a diameter providing a friction fit with the interior wall of the chamber, the inner end of the unit having an enlargement having a planar surface perpendicular to the longitudinal axis of the holder, said surface providing the base of a substantially hemispherical portion, the said planar surface being circular in outline, the peripheral portion of said extension having groves formed therein adapted to be laterally closed by the internal wall of said chamber to provide duct means leading from the socket to the interior of the chamber, and said enlargement being adapted to abut the radially inner edge of said shoulder, said enlargement having grooves in the surface of the hemispherical portion thereof adapted to be laterally closed by said edge, providing means for the smoke to be drawn from said chamber when the holder is in use.

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