

Feb. 21, 1933.

S. W. BARNES
TOBACCO PIPE CLEANER
Filed March 8, 1932

1,898,708

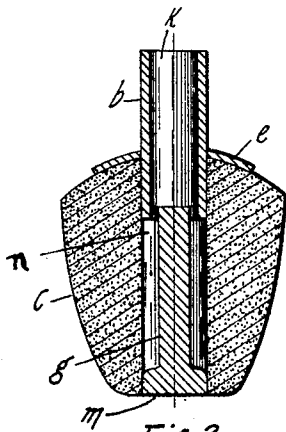


Fig. 2

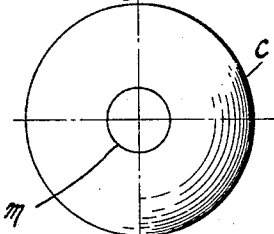


Fig. 4

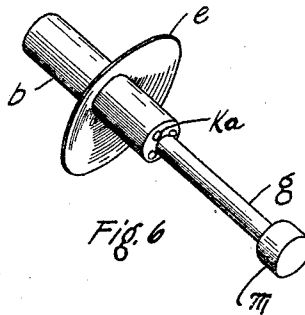


Fig. 6

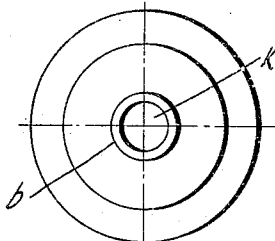


Fig. 5

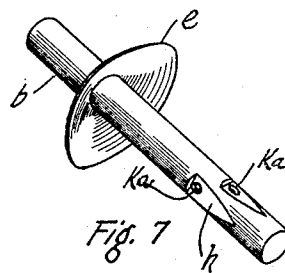


Fig. 7

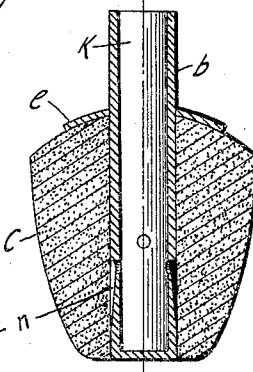


Fig. 3

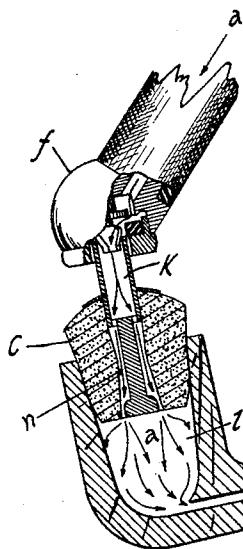


Fig. 1

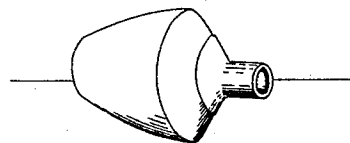


Fig. 8

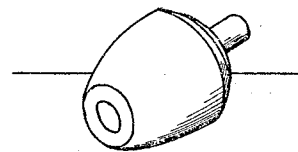


Fig. 9

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TOBACCO-PIPE CLEANER

Application filed March 8, 1932. Serial No. 597,541.

My invention relates to certain new and useful improvements, instruments or devices for cleaning therefrom the dottle and other refuse, sediments and obstructions accumulating from time to time in the bowl and in the smoke and air passageway or conduit in the stem of a tobacco-pipe.

It is the purpose of my invention to provide a means and a device whereby the said bowl and passageway or conduit through the stem of a tobacco-pipe may be cleaned and relieved of such sediments and obstructions aforesaid by the passing through said bowl and stem of the pipe of a jet or blast of air at suitably higher pressure and force than that of the natural atmosphere.

The functions of this invention are made possible and are performed through the medium and use of an ovate plug, stopper, cork or like device, substantially as further illustrated and described in these specifications and the accompanying drawing, such device being hereinafter designated and referred to as a "plug". Said plug being of such relative size and shape as will permit of its being inserted into the upper or open end of any pipe-bowl of conventional shape and size, and such as will by the application of a slight pressure of the plug into the pipe-bowl by the user's hands, be caused to assume its proper operating position in the bowl so as to bring the outward surface of the plug circumferentially into contact with the rim of said pipe-bowl; and thus also a substantial portion of the outward surface of the inserted end of the said plug being brought into more or less contact or close proximity with the walls of the bore of the pipe-bowl, and so permitting and accommodating the further functioning of the invention as hereinafter described. The greater pressure brought to bear upon the plug in the inserting of the same into the pipe-bowl as aforesaid, the more will be the proportion of the surface of the plug that will be contacted with the walls of the pipe-bowl.

The operations of the invention are further promoted by bringing the said plug, when so inserted into the pipe-bowl, into proper conjunction and contact with any mechanism for the providing or storage and releasing of air

under pressure greater than atmospheric pressure, and the releasing of the air from such mechanism in such manner as will permit the flow of the air through the air passageway in the plug into the pipe-bowl, and thence through and out of the pipe-bowl and through and out of the pipestem, at the mouthward end thereof and by way of the smoke and air passageway therein; thus cleaning and removing from the pipe-bowl and stem, all sediments and obstructions therein.

The aforesaid ovated plug is constructed with a central, vertical bore extending there-through, of suitable diameter, through which is extended a rigid stem composed of any suitable metal or other substance, and of size that permits the inserting thereof into said bore through the plug with a tight pressure fit.

The said stem is elongated so as to protrude outwardly and beyond the upper end of the plug, and has a central, vertical bore extending from the upper end thereof downward substantially half the length of the stem; also having a recess or collar-way like indenture in the outward surface of the lower half of said stem, and one or more conduits or air passageways through the body of the stem, from the aforesaid bore in the stem into the aforesaid outwardly located recess. The aforesaid recess may also be made in a corresponding position in the inner wall of the bore of the plug and may be of any other suitable shape, such as will best accommodate and promote economy and facility of manufacture. The requirements as to such recess being such as will create an air chamber between the outward surface of a portion of the lower half of the stem and the wall of the bore of the plug, providing an expansion chamber between the rigid stem and the flexible inner wall of the plug.

The said stem is formed with a flange member, suitably disposed around the outward circumference of the stem, and on the upward half thereof, said flange being made integrally with the stem, or if preferred, as a separate member thereof. In the latter case, said flange may be composed of a slightly con-

caved washer, the same to be slipped over the lower end of the stem and upwards against a suitably placed and formed shoulder on said stem, the shoulder acting so as to hold the washer in proper place between the said shoulder and the elastic body member of the plug. This said flange functions so as to hold the stem and the body of the plug in proper assembly in the device, and to form an airtight union between the stem, flange and body of the plug at the places of contact thereof, thus compelling the air jet to seek escape-ment from the said device at the lower extremity thereof and into the pipe-bowl, as herein elsewhere more fully described, and substantially as shown on the accompanying drawing.

The said stem may be made by any suitable or available process, such as moulding, casting, die-casting, stamping and machining, substantially as described herein and in the accompanying drawing.

The upper and protruding end of the said stem and of the aforesaid vertical bore there-through are properly sized and machined so as to permit of the inserting thereof into the socket in any standard device or valve head on the end of the air hose from any air compressor, air pump or compressed air tank or other mechanism for the storage of air under pressure greater than natural atmospheric pressure, such as are now in common use in automobile filling stations, garages and other similar institutions where accommodations for the convenient inflation of automobile tires and tubes are supplied. It is, however, obvious and contemplated that the air jet may be supplied by any mechanism or means of furnishing and releasing air under pressure, wherever the same may be provided, and by whatever means, e. g., such as may be specially installed in cigar-stores, hotels and other public places, for the accommodation of the users of this invention, or other like uses.

The body of the said ovate plug may be made of rubber or other suitable material having a somewhat soft, pliable, elastic and yielding quality, when under slight pressure or compression, or of combinations and compositions of such materials, such as may be found desirable for convenience or economy of manufacture.

The invention functions in the following manner; the plug, which is designed so as to be conveniently carried in the user's pocket, is inserted into the upper opening of the pipe-bowl, the user meanwhile applying only sufficient pressure with his hands upon the plug to place and hold it in its proper position in the said bowl; the pipe and plug then being brought into proper connection and relation with the hose of the compressed air supply mechanism, with the protruding end of the said stem inserted into the socket

in the fitting or valve head at the end of the said hose, applying sufficient pressure to lift the valve off of the valve seat, in the same manner that said valve head and hose would be applied in the operation of inflating automobile tires, thus releasing the air from the compressor and permitting its passage through the plug and into and through the pipe-bowl and stem.

When the said plug is inserted into the pipe-bowl under hand pressure, the contact and pressure against the rim and walls of the pipe-bowl tend to compress and distort the elastic and yielding matter of the plug so as to force same into the aforesaid recess in the outer-wall of the said stem or in the wall of the bore of the plug, and thus filling up to a greater or less degree the space in said recess. The counter pressure from within said recess, set up by the admission of the jet of air thereinto, said counter-pressure being activated and exerted in a downward and outward direction, against said elastic and yielding matter of the plug, expands and forces the walls of said plug outwardly with a piston like movement into closer and tighter contact with the rim and walls of the pipe-bowl; meanwhile, the air being prevented from escaping in an upward direction between the walls of the stem and of the plug bore, seeks the path of least resistance and forces its way out between the lower end of the stem and of the plug bore, by expanding the lower walls of the plug outwardly, leaving an escape passage for said air between the walls of the lower extremity of the stem and of the plug bore.

This pressure at said location still further tends to force the substance of the walls of the plug in an outward and upward direction and thus making firmer contact between plug and pipe-bowl and tending to hold the said plug securely in the pipe-bowl against the adverse pressure of said air jet. Thus the air is caused to flow through the pipe-bowl and stem and out at the mouthward orifice of the stem.

One of the principal novel and improved features of this device is created by the pressure of the air from within the device causing the more or less plastic and elastic substance comprising the body of the plug to mushroom outwards and upwards against the walls of the pipe-bowl and against the flange member of the stem, thus making a firm and close contact between plug and pipe-bowl, and holding the former in proper place and relation in the latter, against the tendency of the air pressure to unseat the plug from the pipe.

All the aforesaid descriptions generally conforming to, and being substantially as shown by the drawing accompanying this application.

It is the further purpose of my invention to provide a better, more efficient, more sanitary and a substantially indestructible pipe cleaner, available for use at all times and under all ordinary circumstances, where such use is required, and which may be readily and conveniently carried upon the person of the user.

Also to provide a pipe cleaner, which, by its simplicity of design and construction, ruggedness of material, indestructibility, and low cost of manufacture will prove to be an economy and improvement in tobacco-pipe cleaners.

I attain these objects by the device illustrated in the accompanying drawing in which—

Figure 1 is a vertical half section of a tobacco-pipe and of the cleaner-plug as inserted in the upper end of the pipe-bowl, and while all are contacted with the valvehead member of an air hose from a compressed air tank, such as are in common use for inflating automobile tires at automobile filling stations and like institutions; Figure 2 is a vertical half section of the plug with the aforesaid stem assembled in place (see Figs. 8 and 9), taken on any vertical center line there-through, e. g. as per Figure 4. This illustration shows what I consider to be the best materials and the most economical manner of construction of the said plug; however, it is obvious that other similar designs and other materials may be used in said construction, without departing from the spirit of the invention. I have therefore shown in Figure 3 a vertical half section of said plug with an optional form of the said stem, taken on any vertical center line of said plug, as per Figure 8. Figure 4 is a bottom plan view of the plug as per Figs. 2, 3 and 9; Fig. 5 is a top plan view of the plug as per Figs. 2 and 3; Fig. 6 is a picture view in perspective of the said stem according to the form thereof, a cross sectional view of which is shown in assembly with body of plug in Fig. 2; Figure 7 is an optional form of the stem according to the form thereof, a cross sectional view of which is shown in assembly with body of plug in Fig. 3; Figures 8 and 9 respectively are perspective views of the said plug as assembled. Figures 2 and 3 illustrate the body of the plug as made of rubber, and this I regard as being the most suitable material therefor. Optional forms and materials may be used in the manufacture of the said device, according to the place of the manufacture thereof and the facilities for equipment and materials thereat available for the purpose.

Similar letters refer to similar parts throughout the several views.

The letters *a-a-a* and the arrows shown in Fig. 1 indicate the direction of flow and the path of the air jet from the air compressor or compressed-air tank through the

hose, opened valve, plug conduit *k*, pipe-bowl *i* and pipestem *j*. *b* is the upper end of the stem protruding out of and above the upper aperture of the central vertical bore in the elastic body member of the plug; *c* is the body member of the plug; *e* is the flange member of the said stem, made integrally therewith at the place of protrusion of stem from bore of plug; *f* is a part vertical cross sectional view and part side elevation view of a valve head member at the end of an air hose from a compressed-air tank; *g* is the wall of a collarwise recess cut into the lower half of the stem; *h* is an optional form of recess cut into the lower half of the stem; *i* is the chamber of the pipe bowl; *j* is the stem of the pipe; *k* represents a central vertical bore in the upper half of the stem as in Figs. 6 and 7, extending downwards from the top of the stem substantially the distance illustrated in Figs. 1, 2 and 3, and thence continuing via one or more smaller bores or conduits *ka* into the chamber *n* formed by the recess *g* and the walls of the central bore of the plug; *m* is the lower end of the stem, (Fig. 6), below the recess *g*; *n* is a chamber formed by recess *g* and the walls of the central bore of the body member of the plug; *o* is the air and smoke passageway or conduit in pipestem *j*. Those letters between letters *a* and *o* of the alphabet, which are not mentioned above, are not used and are therefore to be disregarded in these descriptions.

While I have shown and described herein only one form of my tobacco-pipe cleaner, and the one which I prefer as being most practical and economical of manufacture, including also one optional method of construction of the stem member (see Fig. 7), nevertheless, it is to be understood that various other changes may be made in the materials used and in the form of construction without departing from the spirit of the invention and the spirit and scope of the appended claim.

Having thus described my invention, what I claim is:

A tobacco-pipe cleaner comprising an ovate plug having a vertical bore centrally located there-through, adapted to be received within the bowl of a tobacco-pipe, a rigid stem adapted to be inserted into said bore with an airtight fit and extending through said bore and outwardly thereof from and above the upper aperture of the bore, said stem having a flange member integral therewith at the place where said stem protrudes from the bore, said stem having a channel extending from the upper end and longitudinally thereof substantially one half the length of the stem, and having a recess in the outward surface of a portion of the lower half of the said stem, and one or more air passageways extending from the lower end of the aforesaid channel into the said recess; the upper protruding end of said stem being adapted for insertion

within the discharge end of an air hose asso-
ciated with a mechanical device for supplying
air under pressure, so as to unseat the valve
therein and permit the flow of the air through
5 the said pipe cleaner.

In witness whereof, I affix my signature.

SAMUEL W. BARNES.

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