May 10, 1938. R. P. HARSHBERGER 2,116,659

ASHTRAY AND EXTINGUISHER

Filed Feb. 14, 1935

Fig. 1.

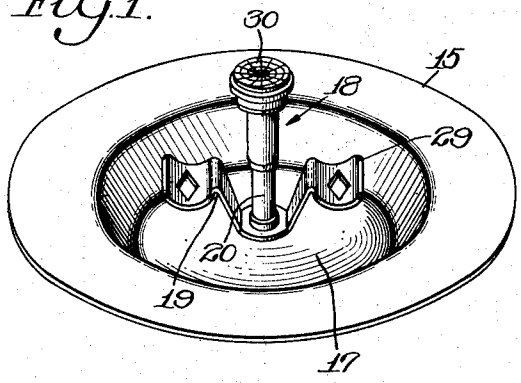


Fig. 7.

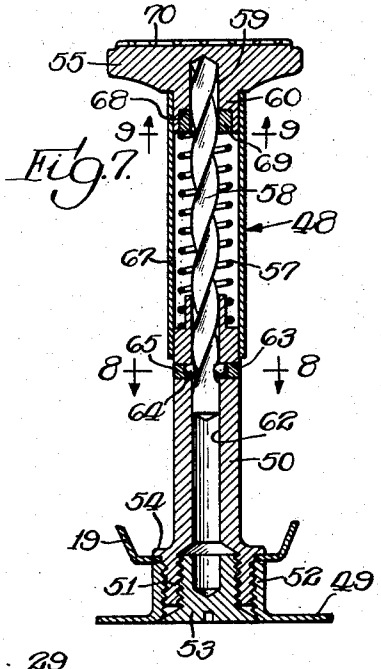


Fig. 2.

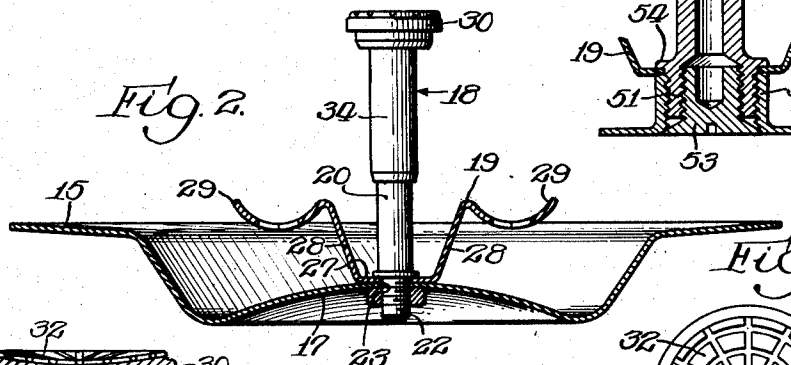


Fig. 5.

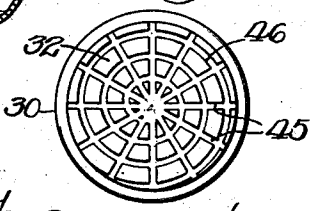


Fig. 3.

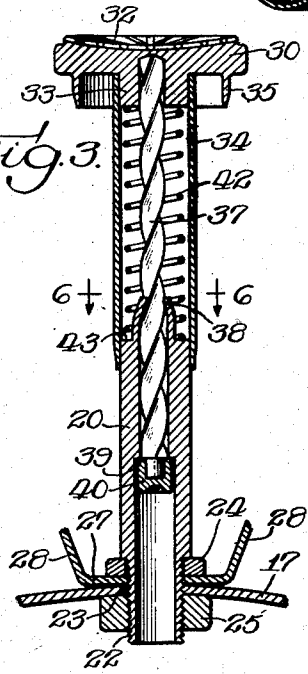


Fig. 4.

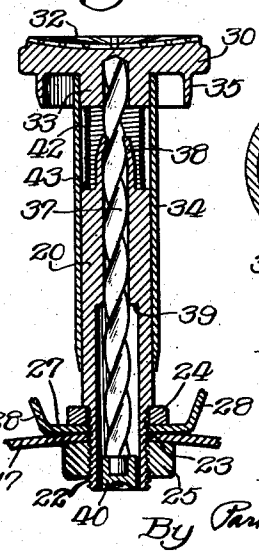


Fig. 6.

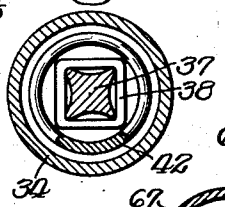


Fig. 8.

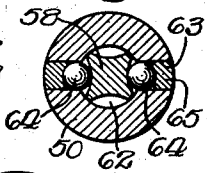
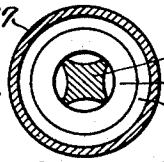


Fig. 9.



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ASHTRAY AND EXTINGUISHER

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Application February 14, 1935, Serial No. 6,415

13 Claims. (Cl. 131—51)

This invention relates to ash trays and more particularly concerns improvements in ash trays embodying means for extinguishing the burning tip of such smokers articles as cigarettes and cigars.

Probably the most common method of extinguishing articles of this nature is to crush the burning tip against a non-yielding surface such as an ash tray bottom. Oftentimes this fails to extinguish or remove every spark from the stub and it will continue to smolder for some time, causing annoyance and fouling the atmosphere. Some devices have been proposed for crushing or otherwise positively extinguishing the burning tip. As a rule, however, these devices have been found somewhat clumsy in operation and require careful and detailed attention by the user, usually necessitating direct manipulative use upon the device of one or both hands. Whenever he must extinguish a stub, therefore, the attention of the user is substantially diverted from whatever occupation he might at the time be engaged in, causing distraction and delay. If careful attention is not given, the stub may remain partially unextinguished and be the cause of annoyance.

The principal aim of the present invention, therefore, is to provide an ash tray embodying simple means for extinguishing the burning tip of a smoking device operable merely by contact with the burning tip itself, the device being positive and thorough in action and requiring practically no effort or attention in use.

Another object is to provide a device of the foregoing character which in operation is contacted by the burning tip of a smoker's article and serves to grind off or disintegrate all ignited portions to remove the same entirely from the stub.

Another object resides in the provision of a vertically reciprocable extinguishing device suitably supported in an ash tray or the like and having means attractively and cooperatively arranged therewith for supporting a cigar or cigarette adjacent thereto above the receptacle bottom in such a position that should the article become dislodged therefrom it must necessarily fall into the receptacle.

Other objects reside in the provision of an extinguisher having a spring urged reciprocatory member in which the spring is of a tension adapting the same to yield easily under slight pressure imposed through a lighted smoker's article and in which the spring acts additionally as a cushion to prevent concussion or noise during operation; in the provision of a device embodying an extinguisher head adapted also to serve as a handle for transporting the device; in the provision of an extinguishing device secured to a receptacle and serving as fastening means for an outstanding support adapted for receiving a lighted smoker's article; and in the provision of an ash tray embodying an extinguishing device having few and simple inexpensive parts adapted to be assembled into a complete, attractive device easily and rapidly without special skill so that the device can be manufactured and sold at low cost.

Other objects and advantages will become apparent from the following description and from the accompanying drawing, in which:

Figure 1 is a perspective view of one form of the invention.

Fig. 2 is an elevational view partially in section of the device of Fig. 1.

Fig. 3 is an enlarged transverse elevation through the extinguisher portion of the device, showing the extinguishing head in the normal or extended position.

Fig. 4 is a view similar to Fig. 3 but showing the extinguisher at the end of its operative movement, herein the lowermost position of the extinguishing head.

Fig. 5 is a top plan view of the extinguisher head.

Fig. 6 is an enlarged sectional plan view taken on line 6—6 of Fig. 3.

Fig. 7 is a transverse sectional elevation through a modified form of extinguisher.

Fig. 8 is a sectional plan view taken substantially along line 8—8 of Fig. 7.

Fig. 9 is a sectional view taken substantially along line 9—9 of Fig. 7.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawing and will herein describe in detail the preferred embodiments, but it is to be understood that I do not thereby intend to limit the invention to the specific forms disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

In one form of the invention, shown by way of example in Figs. 1 to 6, a conventional ash tray 15 having a convex bottom 17 axially supports an extinguisher device generally indicated by the numeral 18. Cooperatively arranged in an attractive manner with the extinguisher device is a holder 19 adapted for conveniently supporting a lighted smoker's article such as a cigarette or cigar directly above the bottom 17.

The extinguisher is conveniently arranged to

be engaged by the burning tip of a smoker's article and is operative to remove or disintegrate all ignited particles of the tip upon the exertion of only slight axial pressure applied through the medium of the article itself. Thus, the device is simple in operation and no particular care or attention is required in using it so that distraction while extinguishing a cigar or cigarette is reduced to a minimum.

In one practical form, the extinguisher 18 may embody a mount comprising a vertically extending tubular post 20 conveniently secured to the ash receptacle. To this end, the lower end of the post is formed as a threaded portion 22 of reduced diameter adapted to fit within a suitable aperture 23 provided centrally in the tray bottom 17.

Snugly encircling the upper end of the reduced portion 22 is a washer 24 providing a substantial bearing opposing the upper face of the tray bottom. Screwed to the lower end of the portion 22 is a nut 25 adapted for drawing the post into rigid engagement with the tray bottom by clamping the margin defining the aperture 23 tightly between the nut and the washer 24.

In the present instance, the extinguisher serves also as fastening means for the holder 19. As seen in Figs. 1 and 2, the holder is of substantially U-shape having an axially apertured base 27 and two outstanding legs 28 terminating in arcuate receivers 29. Conveniently the base 27 is fitted about the reduced post portion 22 between the washer 24 and the tray bottom 17 so that the same is rigidly fastened coincident with attachment of the post 20 (Figs. 3 and 4). Through this arrangement of the holder 19 a smoker's article supported thereby will be wholly over the tray and must fall therein should it be accidentally dislodged.

Supported for rotary reciprocable movement relative to the post 20 is an extinguishing head 30 having a broad upper face 32 and a lower face embodying a central axially bored hub 33. Fitting tightly about the hub is the upper end of a tubular guide casing 34 which is of a length to extend slidably about the post 20 even when the head is in extended position. If desired a thin depending marginal skirt 35 may be provided near the margin of the head.

The means for imparting rotary motion to the head comprises in the present instance a spiral screw 37 fitting at its upper end securely within the bored hub 33. At its lower end, the screw fits slidably within the tubular post 20. In one preferred form, the screw 37 may be of the type known as a square spiral (Fig. 6), and the upper end of the post 20 may be swaged to provide a square guide 38. It will be apparent, therefore, that as the screw moves reciprocally relative to the post upon movement of the head 30, it will be forced to revolve upon its axis in passing through the guide and the head will be rotated accordingly. Desirably, the lower end of the bore within the post is of slightly enlarged diameter forming a shoulder 39; and a stop collar 40 adapted to fit within the bore enlargement is secured upon the lower end of the screw. Abutment of this stop collar against the shoulder will limit upward movement of the screw and will prevent its withdrawal from the post. Thus, the extinguisher may be utilized as a convenient handle in shifting the device.

Maintaining the head 30 in normally extended relation relative to the post 20 is a spring 42 preferably of the expansile helical type and of a tension calculated to yield upon the application of slight pressure upon the head. In diameter the spring is slightly less than the interior of the tube 34 which thus serves as a retainer therefor. At its upper end the spring bears against the hub 33, while its lower end rests upon a shoulder 43 formed on the post 20 adjacent the guide 38. Thus, when the lighted tip of a smoker's article such as a cigarette is pressed lightly downwardly against the face 32, the spring will yield and the head will be caused to descend from a position as seen in Fig. 3 toward a position as indicated in Fig. 4. At the end of the downward reciprocation of the head the spring reaches its limit of compression and provides a noise and shock absorbing cushion between the head and the upper end of post 20. When pressure is released upon the head, the spring 42 will cause the same immediately to resume its normal or extended position relative to the post.

In the present instance the means for removing a burning tip comprises a plurality of radially arranged, equally spaced kerfs 45 (Fig. 5) on the face 32. These kerfs, it will readily be understood, have an abrasive action upon rotation of the head designed thoroughly to disintegrate the tip so that every vestige of ignited material will be removed from the stub.

Since the extinguisher is most easily operated and the most effective results are obtained from the abrasive action of the kerfs 45 when the burning tip is centered upon the face 32 as pressure is applied, I provide means designed to force the tip towards the center of the face should the tip at the commencement of operation be inadvertently placed toward the outer margin. Herein this means is shown as comprising a spiral kerf 46 running from the periphery toward the center of the face 32. As will be observed from Fig. 5, the spiral 46 runs counterclockwise toward the center, when the head rotates clockwise, herein a condition incident to descending movement. Thus, should the burning tip be placed toward the margin of the face 32 it will quickly be forced toward the center by virtue of the spiral action imparted by the spiral kerf. A further aid in centering the burning tip may be provided by shaping the face 32 concavely (Figs. 3 and 4).

As seen in Figs. 7 to 9, inclusive, the invention may embody an extinguisher indicated generally by 48, including certain modifications of structural detail but adapted for similar operation as the extinguisher 18. As shown, the extinguisher 48 may be applied conveniently to a tray having a flat bottom 49 although, of course, it may be secured to a tray of any other shape, as desired. Thus, a vertical tubular post 50 having an externally threaded base 51 is fitted within an internally threaded annular upstanding flange 52 formed on the tray bottom 49. If desired, the base of the post may be bored and internally threaded to receive a lock screw 53.

Cooperative arrangement between the holder 19 and the extinguisher 48 is procured by equipping the upper end of the post base 51 with a radial flange 54 serving to clamp the holder base against the upper edge of the flange 52 coincident with securing the post in place.

Resiliently supported in spaced relation above the upper end of the post 50 is an extinguisher head 55 and a yieldable helical spring 57 is mounted for normally maintaining the spaced relative position of these two members. Similarly as in the extinguisher 18, rotary motion is imparted to the head 55 by a spiral screw 58

rigidly secured in a bore 59 axially formed in a hub 60 depending from the lower face of the head. At its lower end, the screw 58 slidably extends into an axial bore 32 in the post 50.

As best seen in Figs. 7 and 8, the post 50 has near its upper end coaxial transverse bores 63 each providing a housing for a ball 64 which is held in place by a plug 65. The balls 64 provide bearings fitting against opposite faces of the screw 58 and cause the screw to rotate as the same is moved reciprocally in the bore 62 upon movement of the head 55. This ball bearing arrangement has the advantage over the square guide 34 in that less friction is developed and somewhat smoother operation results. Moreover, wear is a very negligible factor where the ball guide is employed. A stop may be conveniently provided at the lower end of the screw 58 by discontinuing the spiral short of the end so that withdrawal will be prevented by a locking engagement with the balls 64 (see Fig. 7).

An enclosing guide tube 67 fits snugly about the periphery of the hub 60 and extends downwardly into slidable engagement with the periphery of the post 50. In order to secure a tight fit of the tube 67 about the hub 60, the latter may be provided with a rabbeted groove 68 adapted to receive a bushing 69. This bushing may be dimensioned to provide an exceedingly snug driven fit about the screw 58 which is thus rigidly held in the head. Furthermore the bushing is calculated while being driven into place to spread slightly the surrounding margin of the hub 60 so as to cause the latter to grip tightly the upper end of the tube 67. In this manner the parts are thoroughly united and are capable of withstanding rough usage without separation.

If desired, the head 55 may be provided with a flat face 70 which may have a similar arrangement of radial and spiral kerfs as seen in Fig. 5.

From the foregoing, it will be observed that the invention provides convenient and efficient means for quickly extinguishing a smoker's article without requiring any special skill or adeptness in operation. The user need only place the lighted tip of a smoker's article against the extinguishing head and exert slight pressure upon the stub perpendicularly to the head in order to effect rapid and thorough removal or extinction of all burning material. The device embodies few and simple parts that may be assembled quickly without special equipment or peculiar skill, and requires no mechanical attention in use.

I claim as my invention:

1. In a device of the class described, a receptacle for receiving smoker's refuse, means providing an extinguisher adapted to operate upon and extinguish the burning tip of a lighted smoker's article, said receptacle supporting said extinguisher in position to receive all refuse falling therefrom, and means cooperative with said extinguisher and responsive to a force applied thereto through the burning tip to effect relative movement between the extinguisher and the tip.

2. In a device of the class described, a receptacle, means carried by said receptacle embodying a reciprocable and rotatable member normally in extended position and adapted for engagement and movement by the lighted end of a smoker's article to be extinguished, means for rotating said member, means cooperative with said member for maintaining the latter normally in said extended position and yieldable to permit reciprocatory movement of said member when pressure is applied through the lighted end of a smoker's article, and means coactive with said member for extinguishing said lighted end coincident with said movement thereof.

3. A device of the character described including a receptacle, a vertical post carried by said receptacle, a member associated with and reciprocable relative to said post, means cooperative with said member and post for imparting rotary motion to said member simultaneously with reciprocation thereof, said member being adapted for receiving the lighted end of a cigarette or the like for removing ignited articles during rotation, and means arranged to maintain said member in extended position until pressure is applied thereto through the lighted tip of a cigarette or cigar.

4. In a device of the character described, an extinguisher including a tubular vertical post having guide means, a head supported in spaced relation to said post, resilient means for normally maintaining said head in one position but yieldable to permit movement of said head to another position, a spiral screw associated with said guide means and cooperative with said head for imparting rotary motion thereto upon yielding of said resilient means, and means on said head operative as an incident to rotary motion of the latter for removing the burning tip of a smoker's article forced axially thereagainst with necessary pressure.

5. In a device of the character described, an extinguisher comprising an extinguishing head, a hub formed on said head and including a bore having a rabbeted groove adjacent its outer end, a screw member fitting within said bore, an elongated casing tube fitting snugly about said hub, and a bushing forced into said groove for clinching said screw member and spreading said hub to retain said sleeve.

6. In a device of the character described, a receptacle, an extinguishing device including a rotary member having a surface adapted to receive the burning tip of a smoker's article, and kerfs in said surface adapted upon rotation of said member by the application of slight pressure thereon by said tip to disintegrate the latter.

7. In a device of the character described a receptacle, an extinguishing device carried by said receptacle, a rotary member forming part of said device and having a surface for the reception of the burning tip of a smoker's article forcibly applied thereagainst, said surface including means adapted upon rotation of said head to center said burning tip thereon.

8. In a combined ash tray and extinguisher for smokers' articles, a receptacle, a tubular member mounted on said receptacle, an extinguishing head including a spiral screw member extending therefrom and fitting slidably within said tubular member, guide means on the outer end of said tubular member cooperative with said spiral screw member for rotating the latter and said head upon relative longitudinal movement between said head and tubular member, resilient means between said head and outer end of said tubular member for normally maintaining said head in extended position, and an outer casing carried by said head and projecting therefrom and encircling said tubular member to enclose said resilient means and provide a guide for maintaining said head against lateral movement relative to said tubular member.

9. In combination a device for extinguishing smokers' articles, a tubular member adapted to be

secured to and project outwardly from the wall of a receptacle, an extinguisher head adapted to be engaged by the burning tip of an article to be extinguished and having an elongated element projecting therefrom, said element having a spiral face around its periphery, and means rigid with the outer end of said tubular member for engaging said spiral face and guiding said element and head for rotation incident to relative longitudinal movement between the member and head.

10. In a device for extinguishing smokers' articles, a receptacle, an extinguishing mechanism including a rotary member having a surface adapted to receive the burning tip of a smoker's article, radial kerfs in said surface adapted to disintegrate the burning tip upon rotation of said member, and a spiral kerf in said surface running inwardly contrariwise to the direction of rotation of said member whereby to effect a centering action upon said burning tip during rotation of the rotary member.

11. In a device of the character described, a receptacle, a member carried by said receptacle for extinguishing the burning tip of a smoker's article, said member being movable in a given direction across the member engaging face of said burning tip in response to a force applied thereto through the burning tip, and means arranged to return said member automatically into position for repeated use.

12. In a device of the character described, a receptacle, and means associated with said receptacle for extinguishing the burning tip of a smoker's article, said means being operative in response to a force applied thereto through the burning tip to move relative to and across the means engaging face of the tip and embodying means for disintegrating said tip during such relative movement.

13. In combination in a device of the character described, a support, means mounted rotatably upon said support for extinguishing the burning tip of a smoker's article pressed thereagainst, and means for effecting rotary extinguishing movement of said rotatable means responsive to the pressure of said tip against said rotatable means.

RUSSELL P. HARSHBERGER.