A game ticket scratch-off device that includes a housing, a power supply such as a battery, a motor, a head, and an abrasive element. The battery is contained within the housing. The motor is electrically connectable to the battery to be driven thereby. The head is coupled to the motor to be moved thereby. The head is located outside the housing. The abrasive element is coupled to the head and provides an abrasive surface to remove overlay from a scratch-off game ticket. The abrasive element comprises a sanding screen. An adhesive tape is mounted to the abrasive element, wherein the head comprises a flat surface and the adhesive tape is secured to the flat surface to mount the adhesive element to the head.
MOTORIZED GAME TICKET SCRATCH-OFF APPARATUS

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to an apparatus for scratching off the overlay that is applied to a game ticket to reveal game information beneath the overlay.

BACKGROUND OF THE INVENTION

[0002] Lottery ticket scratch-off devices that incorporate a motor drive are known as described in U.S. Pat. Nos. 5,907,882; 6,065,181; and 5,794,303.

[0003] U.S. Pat. No. 5,907,882 describes a motorized scratch-off device located within an enclosed housing. During use of this device, a lottery ticket is inserted into a housing wherein overlay material, such as latex, is removed by a motor driven brush.

[0004] U.S. Pat. No. 6,065,181 describes a ticket scratch-off device that includes a rotating disk that has projecting tabs that are used to scratch the latex off a lottery ticket. The rotating disk is coupled to a vacuum device and is located within a shroud having a frusto-conical configuration.

[0005] U.S. Pat. No. 5,794,303 also describes a scraper and vacuum combination for scratching off the overlay on a lottery ticket. A brush is rotated by a shaft and is located within a vacuum shroud of the housing.

[0006] The present inventor has recognized that it would be advantageous to provide a game scratch-off device which is more easily controlled to remove selective portions of the game ticket overlay without removing control portions of the overlay which must remain so as to void the game ticket. The present inventor has recognized that it would be advantageous to provide a scratch-off device wherein the scratch-off element that receives the overlay is easily replaced when worn. The present inventor has recognized it would be advantageous to provide a scratch-off device that was economically manufactured and effective in operation.

SUMMARY OF THE INVENTION

[0007] The present invention provides a game ticket, such as a lottery ticket, scratch-off device, that includes a housing, a power supply such as a battery, a motor, a head, and an abrasive element. The power supply can be contained within the housing. The motor is electrically connectable to the power supply to be driven thereby. The head is coupled to the motor to be moved thereby. The head is located outside the housing. The abrasive element is coupled to the head and provides an abrasive surface to remove overlay from a game ticket.

[0008] Preferably, the head is moved by the motor in an oscillating fashion. That is, the head is rotated alternately in opposite rotary directions. Preferably, the abrasive element comprises a sanding screen. Preferably, an adhesive tape or pad is mounted to the abrasive element, wherein the head comprises a flat surface and the adhesive tape or pad is secured to the flat surface to mount the abrasive element to the head. They adhesive tape or pad preferably includes opposite adhesive surfaces, wherein the abrasive element comprises a sanding screen having a circular perimeter, and the head includes a corresponding circular flat surface, and wherein the adhesive tape or pad is applied between the corresponding flat surface and the sanding screen to attach the sanding screen to the flat surface.

[0009] The game ticket scratch-off device according to the present invention provides advantages over the known devices. Particularly, the head of the device is located outside of the housing where the head can be visually monitored and directed to precisely remove those overlay areas of the game ticket that are desired to be removed without removing overlay portions of the game ticket which are not desired to be removed. The scratch-off devices of the prior art are configured such that close visual control of the scratching operation is not as easily accomplished given the fact that the device comprises either a ticket receiving closed housing or vacuum skirts which obscure visual observation of the scraping process. In contrast, the head of the present invention is easily observable during its operation to allow an operator to precisely direct the head to those areas of the game ticket which are desired to be unveiled.

[0010] Also, the device of the present invention provides an abrasive element that is easily replaced after a period of usage. The abrasive element can be easily peeled from the head and a new abrasive element can be adhesively applied to the head. The abrasive element can be provided with an adhesive tape or pad covered by release layers covering both adhesive sides of the adhesive tape or pad that are peeled off to reveal the adhesive sides for attaching the abrasive element to the head. Alternately, the replacement abrasive element can be pre-applied to the adhesive tape or pad with only its opposite adhesive side covered by a release layer. When the release layer is removed the adhesive pad or tape with abrasive element applied thereto, can be adhered to the head.

[0011] Replacement adhesive pads or tapes and abrasive elements can be sold on a card, to be peeled off one at a time from the card and applied onto the head of the device. Each abrasive element can be separate from the adhesive pad or tape or pre-applied to an adhesive pad or tape. The device according to the invention can be made of a compact size such as to be hung from a user's keychain or carried in a user's pocket. The device according to the invention can have a speed-control to adjust the speed of movement of the head. This could be an important advantage given different overlay removal resistance and/or degree of wearing of the abrasive element, to operate the device effectively and also to prolong battery life.

[0012] According to another aspect of the invention, abrasive elements of varying sizes can be used depending on the requirements of the game card, wherein a larger abrasive element is more effective for removing large areas and a smaller abrasive element is more effective for removing small and precise areas. According to another aspect of the invention provision is made on the head for receiving an extension for use with a small size abrasive element.

[0013] Numerous other advantages and features of the present invention will be become readily apparent from the following detailed description of the invention and the embodiments thereof, and from the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a schematic view of a scratch-off device and game ticket incorporating the present invention;
FIG. 2 is an enlarged view of an abrasive element taken generally along line 2-2 of FIG. 1;

FIG. 3 is a sectional view taken generally along line 3-3 of FIG. 2;

FIG. 4 is an exploded schematic view of an alternate system of the invention; and

FIG. 5 is an exploded schematic view of an attachment system used with the system shown in FIG. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

While this invention is susceptible of embodiment in many different forms, there are shown in the drawings, and will be described herein in detail, specific embodiments thereof with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the specific embodiments illustrated.

FIG. 1 illustrates the scratch-off device 10 for use with a game ticket 12 in accordance with the present invention. The scratch-off device 10 is shown schematically.

The scratch-off device 10 can be configured, up to the head 38, in a known fashion such as applied to electric powered toothbrushes. For example, a BRAUN PLAQUE REMOVER 3D ACTION powered toothbrush modified in accordance with the present invention and achieve satisfactory results. Similar toothbrushes are also disclosed in US patents: U.S. Pat. Nos. 5,311,633; 5,577,285; 5,974,615; 5,613,258; 5,732,433; 5,850,655; and 5,943,723, all herein incorporated by reference for the disclosure of a motorized handheld implement that moves a working head, where compatible with the mechanical operation of the present invention.

The device 10 includes a housing 14 which contains a battery 18 and a motor 22. An operable switch 24 selectively delivers power to the motor 22 from the battery 18. The motor 22 delivers rotary power to a movement version assembly, or gear train 26. The gear train 26 drives a shaft 40, preferably in an oscillating rotary motion. The shaft 30 transmits rotary power through a right angle drive arrangement 32 to an output shaft 36 which drives a head 38 in rotary motion, preferably oscillating rotary motion, i.e., back and forth rotary motion. An abrasive element 42 is attached to the head 38 to move therewith. Preferably an adhesive pad or tape 44 is arranged between the abrasive element 42 and the head 38 to secure the abrasive element 42 to the head 38. Alternately, one or more spacers 45, such as self adhesive cork pads, can be applied between the head 38 and the pad 44. The pad 44 can be one or more self-stick cork pads having an abrasive element adhesively secured to one surface thereof.

The motor 22 could incorporate a speed control 22a that is selectable by a user using a knob or switch 22b to adjust the speed of movement of the head 38. The speed can be adjusted depending on the difficulty of removing the overlay and the worn condition of the abrasive element 42. The speed can be adjusted accordingly to prolong battery life.

The surface 38a of the head 38 is oriented such that a line 58 that is perpendicular to the surface 38a is perpendicular to a longitudinal axis 59 of the housing 14.

As an alternate to the battery, the device 10 could be powered by a power supply connected by power cord to a domestic AC outlet.

The game ticket 12 includes a base card 60 upon which selective areas of the latex or other covering 62 are applied. Beneath the latex coverings 62 are indicia that correspond to game information. As an example, the arrangement of the overlays 62 is located in a grid pattern simulating the game "tic-tac-toe." To play the game, a player can make up the three of the overlays 62 off the card leaving the remaining overlays in place. Removing more than three overlays voids the game card. Furthermore, a control overlay 66 is sometimes used on the card, covering secret indicia for validating winning cards and to prevent counterfeiting. The control overlay 66 cannot be removed by the user without voiding the playing card. In sum, in order to properly play the game represented by the game ticket 12, some overlays are selectively removed and other overlays must be left on the card.

FIG. 2 illustrates the abrasive element 42 mounted on the adhesive tape. The abrasive element 42 comprises an abrasive screen such as typically used, in larger format, in drywall sanding. Such abrasive screens are typically composed of a sharp silicon carbide material and are commonly available, such as from 3M Corp. of St. Paul, Minn., USA. A fine grade (coarseness) sanding screen is preferred. Diameters of about ¼, ½ or ⅜ inch are preferred.

FIG. 3 illustrates the abrasive screen 42 fixed by adhesive onto a surface 44a of the adhesive pad or tape 44 which has an opposite adhesive surface 44b covered by a release layer 72. Preferably, the abrasive screen 42 is pre-attached to a corresponding pad or tape 44. When a new screen element 42 is to be fastened to the head 38, the release layer 72 is peeled off revealing the adhesive surface 44b of the pad or tape 44 which can be removably fixed to a flat surface 38a of the head 38. When a used, worn-out screen 42 is to be removed from the head 38, the adhesive tape 44 can be peeled from the head 38 and any remaining adhesive moved by scraping or by cleaning.

Alternately, the abrasive screens 42 could be supplied separately from the tapes or pads 44 and the tapes or pads have opposite adhesive surfaces that are covered by release layers. One release layer would be removed to secure the abrasive screen 42 to the pad 44, and the opposite release layer 72 would be removed to secure the pad 44, with the screen 42 attached thereto, to the head 38.

FIG. 4 illustrates an alternate system wherein the device 10 includes a removable housing part 104. The housing part 104 includes an internal coupling 106 that receives a moving element 108 that is driven by the movement conversion assembly 26 as shown in FIG. 1. The removable housing part 104 also contains the right angle drive 32 and the shaft 36 which drives the head 38. The head 38 mounts the abrasive screen 42 via the tape or pad 44. An alternate removable housing part 110 is identically configured as the removable housing part 104 except an abrasive screen 42a having a smaller diameter than the abrasive screen 42 shown associated with the removable housing part 104, can be applied as desired. In this way, a plurality of removable housing parts can be provided each with a pre-mounted abrasive screen of variable size. Thus a single drive can be used in conjunction with a plurality of selectable removable housing parts having abrasive screens of variable diameters.

FIG. 5 illustrates a removable housing part 120, similar in all respects to the removable housing parts 104, 110 except for mounting a modified head 138 (shown in section). The modified head 138 includes a central socket
138a. The pad or tape 44 can be adhesively secured to the head 138 over the socket 138a. If a smaller adhesive screen 42a is desired to be used, it is secured by the adhesive tape or pad 44 to an adapter 140. The adapter 140 includes a mounting surface 142 for receiving the adhesive tape or pad 44, and a plug 144. The plug 144 fits snugly into the socket 138a. When the head 138 is driven in oscillating rotation, the adapter 140 is also driven as is the abrasive screen 42a. The plug 144 and the socket 138a can include corresponding flat surface portions around their respective perimeters to prevent rotation of the plug 144 within the socket 138a during operation.

[0032] From the foregoing, it will be observed that numerous variations and modifications may be effected without departing from the spirit and scope of the invention. It is to be understood that no limitation with respect to the specific apparatus illustrated herein is intended or should be inferred.

1. In combination, a game ticket scratch-off device and a game ticket, comprising:

   a game ticket having game information covered by a removable overlay;
   a housing;
   a power supply contained within said housing;
   a motor electrically connectable to said power supply to be driven thereby;
   a head coupled to said motor to be moved thereby, said head located outside said housing; and
   an abrasive element coupled to said head and providing an abrasive surface to remove said overlay from said game ticket.

2. The combination according to claim 1, wherein said head is moved by said motor in an oscillating fashion.

3. The combination according to claim 1, wherein said abrasive element comprises a sanding screen having a grid pattern of abrasive strands.

4. The combination according to claim 1, comprising an adhesive tape mounted to said abrasive element, wherein said head comprises a flat surface and said adhesive tape is secured to said flat surface to mount said abrasive element to said head.

5. The combination according to claim 1, comprising an adhesive tape having opposite sticking surfaces, wherein said abrasive element comprises a sanding screen having a grid pattern of abrasive strands and having a circular perimeter, and said head includes a corresponding circular flat surface, wherein said adhesive tape is applied between said corresponding flat surface and said sanding screen to attach said sanding screen to said flat surface.

6. The combination according to claim 1, wherein said head includes a flat surface for mounting said abrasive element, said flat surface being arranged such that a vector normal to said flat surface is perpendicular to said axis of said housing.

7. The combination according to claim 1, wherein said power supply comprises a battery.

8. The combination according to claim 1, further comprising an adjustable speed control connected between said power supply and said motor, said adjustable speed control controllable by a user to set a speed of movement of said head.

9. The combination according to claim 1, comprising an adapter arranged between said head and said abrasive element, said abrasive element secured to said adapter and said adapter removably coupled to said head.

10. The combination according to claim 1, wherein said head is moved by said motor in an oscillating fashion;

   wherein said abrasive element comprises a sanding screen having a grid pattern of abrasive strands, and having a circular perimeter;

   comprising an adhesive tape mounted to said abrasive element, wherein said head comprises a flat surface and said adhesive tape is secured to said flat surface to mount said sanding screen to said head;

   said flat surface being arranged such that a vector normal to said flat surface is perpendicular to said axis of said housing; and

   wherein said power supply comprises a battery.

11. The combination according to claim 10 wherein said head is easily replaceable and said head is one of a plurality of selectable heads of varying diameters, and said sanding screen is one of a plurality of sanding screens each having a diameter corresponding to the selected head.

12. The combination according to claim 1 wherein said head is easily replaceable and said head is one of a plurality of selectable heads of varying diameters, and said sanding screen is one of a plurality of sanding screens each having a diameter corresponding to the selected head.

13. A combination comprising:

   a game ticket having game information covered by a removable overlay;

   a hand-held powered scratch-off device being of a size to be carried in a user’s pocket, comprising a housing, a battery power supply contained within said housing, a motor electrically connectable to said power supply to be driven thereby, a head coupled to said motor to be moved thereby, said head located outside said housing, and a sanding screen having a grid pattern of abrasive strands coupled to said head and providing an abrasive surface to remove said overlay from said game ticket; and

   a plurality of replaceable sanding screens that are pre-cut to fit on said head.

14. The combination according to claim 13 wherein said head is easily replaceable and said head is one of a plurality of selectable heads of varying size, and said plurality of replaceable sanding screens each has a size corresponding to the selected head.

15. The combination according to claim 14 wherein each of said plurality of replaceable sanding screens has a circular shape.

16. The combination according to claim 13 wherein each of said plurality of replaceable sanding screens has a circular shape.

17. The combination according to claim 13 wherein said plurality of replaceable sanding screens are removably carried on a card.

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