An improved vandal-resistant paper towel dispenser for public washrooms includes a mechanism for storing and dispensing paper towels (14, 16) and an outer housing (12) for encasing the mechanism. The outer housing includes a rear mounting surface (18) that is adapted to be secured to a wall, and a shell-like forward surface (22), connected to the rear mounting surface, for protecting the mechanism from individuals who might have destructive intent. Advantageously, the shell-like forward surface is softly rounded to an extent that it is practically impossible to obtain a handhold on the top or sides of the outer housing, whereby a vandal will be prevented from grabbing the dispenser and pulling it off the wall.
FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>Armenia</td>
<td>GB</td>
<td>United Kingdom</td>
<td>MW</td>
<td>Malawi</td>
</tr>
<tr>
<td>AT</td>
<td>Austria</td>
<td>GE</td>
<td>Georgia</td>
<td>MX</td>
<td>Mexico</td>
</tr>
<tr>
<td>AU</td>
<td>Australia</td>
<td>GN</td>
<td>Guinea</td>
<td>NE</td>
<td>Niger</td>
</tr>
<tr>
<td>BB</td>
<td>Barbados</td>
<td>GR</td>
<td>Greece</td>
<td>NL</td>
<td>Netherlands</td>
</tr>
<tr>
<td>BE</td>
<td>Belgium</td>
<td>HU</td>
<td>Hungary</td>
<td>NO</td>
<td>Norway</td>
</tr>
<tr>
<td>BF</td>
<td>Burkina Faso</td>
<td>IE</td>
<td>Ireland</td>
<td>NZ</td>
<td>New Zealand</td>
</tr>
<tr>
<td>BG</td>
<td>Bulgaria</td>
<td>IT</td>
<td>Italy</td>
<td>PL</td>
<td>Poland</td>
</tr>
<tr>
<td>BJ</td>
<td>Benin</td>
<td>JP</td>
<td>Japan</td>
<td>PT</td>
<td>Portugal</td>
</tr>
<tr>
<td>BR</td>
<td>Brazil</td>
<td>KE</td>
<td>Kenya</td>
<td>RO</td>
<td>Romania</td>
</tr>
<tr>
<td>BY</td>
<td>Belarus</td>
<td>KG</td>
<td>Kyrgyzstan</td>
<td>RU</td>
<td>Russian Federation</td>
</tr>
<tr>
<td>CA</td>
<td>Canada</td>
<td>KP</td>
<td>Democratic People's Republic of Korea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF</td>
<td>Central African Republic</td>
<td>KR</td>
<td>Republic of Korea</td>
<td>SD</td>
<td>Sudan</td>
</tr>
<tr>
<td>CG</td>
<td>Congo</td>
<td>KZ</td>
<td>Kazakhstan</td>
<td>SE</td>
<td>Sweden</td>
</tr>
<tr>
<td>CH</td>
<td>Switzerland</td>
<td>LI</td>
<td>Liechtenstein</td>
<td>SG</td>
<td>Singapore</td>
</tr>
<tr>
<td>CI</td>
<td>Cote d'Ivoire</td>
<td>LK</td>
<td>Sri Lanka</td>
<td>SI</td>
<td>Slovenia</td>
</tr>
<tr>
<td>CM</td>
<td>Cameroon</td>
<td>LR</td>
<td>Liberia</td>
<td>SK</td>
<td>Slovakia</td>
</tr>
<tr>
<td>CN</td>
<td>China</td>
<td>LT</td>
<td>Lithuania</td>
<td>SN</td>
<td>Senegal</td>
</tr>
<tr>
<td>CS</td>
<td>Czechoslovakia</td>
<td>LU</td>
<td>Luxembourg</td>
<td>SZ</td>
<td>Swaziland</td>
</tr>
<tr>
<td>CZ</td>
<td>Czech Republic</td>
<td>LV</td>
<td>Latvia</td>
<td>TD</td>
<td>Chad</td>
</tr>
<tr>
<td>DE</td>
<td>Germany</td>
<td>MC</td>
<td>Monaco</td>
<td>TG</td>
<td>Togo</td>
</tr>
<tr>
<td>DK</td>
<td>Denmark</td>
<td>MD</td>
<td>Republic of Moldova</td>
<td>TJ</td>
<td>Tajikistan</td>
</tr>
<tr>
<td>EE</td>
<td>Estonia</td>
<td>MG</td>
<td>Madagascar</td>
<td>TT</td>
<td>Trinidad and Tobago</td>
</tr>
<tr>
<td>ES</td>
<td>Spain</td>
<td>ML</td>
<td>Mali</td>
<td>UA</td>
<td>Ukraine</td>
</tr>
<tr>
<td>FI</td>
<td>Finland</td>
<td>MN</td>
<td>Mongolia</td>
<td>UG</td>
<td>Uganda</td>
</tr>
<tr>
<td>FR</td>
<td>France</td>
<td>MR</td>
<td>Mauritania</td>
<td>US</td>
<td>United States of America</td>
</tr>
<tr>
<td>GA</td>
<td>Gabon</td>
<td></td>
<td></td>
<td>UZ</td>
<td>Uzbekistan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>VN</td>
<td>Viet Nam</td>
</tr>
</tbody>
</table>
VANDAL RESISTANT WASHROOM DISPENSERS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates broadly to the field of dispensers for dispensing personal hygiene products, such as paper towels, toilet tissue and hand soap, in a public washroom. More specifically, this invention relates to a dispenser that is specifically designed to deter and escape damage from potential vandals.

2. Description of the Prior Art

Vandalism in public restrooms is an increasingly serious problem for property owners, consumers and maintenance personnel in the United States and throughout the world. All too often, dispensers for paper towels, toilet tissue and hand soap such as those manufactured and sold by the assignee of this invention, Scott Paper Company, are targets for such activity. Paper towel dispensers, in particular, in some locations are regularly beaten, burned, defaced with graffiti, and pulled or pried off of the wall, rendering them inoperable for others. In addition, vandals will pull clumps of paper towels out of the dispenser, scattering them about the washroom or, even worse, stuffing them into toilets or sink fixtures.

Unfortunately, damaged or inoperative dispensers are expensive to replace, and, ironically, their replacements present attractive new targets to vandals once installed. Additionally, the institutions that suffer most
from vandalism are often underfunded and in a poor position to be buying washroom fixtures and dispensers on a frequent basis.

A long and unfilled need exists for a public restroom dispenser that will deter and resist damage from vandalism and careless maintenance personnel.

**SUMMARY OF THE INVENTION**

It is an object of this invention to provide a public restroom dispenser that will deter and resist damage from vandalism and careless maintenance personnel.

In order to achieve the above and other objects of the invention, an improved vandal-resistant paper towel dispenser for public washrooms includes, according to a first aspect of the invention a system for storing and dispensing paper towels; and an outer housing for encasing the storing and dispensing system, the outer housing including a rear mounting surface that is adapted to be secured to a wall, and a shell-like forward surface, connected to the rear mounting surface, for protecting the storing and dispensing system from individuals who might have destructive intent, the shell-like forward surface being softly rounded to an extent that it is practically impossible to obtain a handhold on the top or sides of the outer housing, whereby a vandal will be prevented from grabbing the dispenser and pulling it off the wall.

According to a second aspect of the invention, an improved vandal-resistant paper towel dispenser for public washrooms includes a system for storing and dispensing paper towels; an outer housing for encasing the storing and dispensing system; an access door defined in the outer housing for loading paper towels into the dispenser; a concealed locking and release mechanism for opening the access door; and a decoy locking mechanism that is at least as visible than the concealed locking and release mechanism, whereby vandals intent on opening the dispenser will be confused.
According to a third aspect of the invention, an improved vandal-resistant washroom product dispenser for public washrooms includes a system for storing and dispensing a washroom product; and an outer housing for encasing the storing and dispensing means, the outer housing comprising a rear mounting surface that is adapted to be secured to a wall, and a shell-like forward surface, connected to the rear mounting surface, for protecting the storing and dispensing system from individuals who might have destructive intent, the shell-like forward surface being softly rounded to an extent that it is practically impossible to obtain a handhold on the top or sides of the outer housing, whereby a vandal will be prevented from grabbing the dispenser and pulling it off the wall.

These and various other advantages and features of novelty which characterize the invention are pointed out with particularity in the claims annexed hereto and forming a part hereof. However, for a better understanding of the invention, its advantages, and the objects obtained by its use, reference should be made to the drawings which form a further part hereof, and to the accompanying descriptive matter, in which there is illustrated and described a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a perspective view of an improved vandal resistant paper towel dispenser that is constructed according to a preferred embodiment of the invention;

FIGURE 2 is a perspective view showing the dispenser of FIGURE 1 in an open position;

FIGURE 3 is a cross-sectional view taken along lines 3-3 in FIGURE 1;

FIGURE 4 is a cross-sectional view taken along lines 4-4 in FIGURE 1;

FIGURE 5 is a fragmentary view depicting a concealed locking mechanisms in the dispenser shown in FIGURES 1-4; and
FIGURE 6 is a rear elevational view of the dispenser shown FIGURES 1-5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

Referring now to the drawings, wherein like reference numerals designate corresponding structure throughout the views, and referring in particular to FIGURES 1 and 2, an improved vandal resistant paper towel dispenser 10 that is constructed according to a preferred embodiment of the invention includes an outer housing 12 that defines an interior space in which first and second storing and dispensing mechanisms 14, 16 are mounted. As can best be seen in FIGURE 3, outer housing 12 includes a rear mounting surface 18 having mounting holes 20 defined therein so as to be securable to a fixed vertical surface, such as the wall of a washroom. According to one particular advantageous aspect of the invention, the outer housing 12 of dispenser 10 includes a shell-like forward surface 22 connected to the rear mounting surface 18, for protecting the storing and dispensing mechanisms 14, 16 from individual who might have destructive intent. As may best be seen in FIGURE 1, shell-like forward surface 22 is softly rounded to an extent that it is particularly impossible to obtain a hand hold on the top 26 or side 24 of the outer housing 12. Accordingly, due to the shape of forward surface 22, a vandal would be prevented from grabbing the dispenser 10 and pulling it off the wall.

Dispenser 10 further includes reinforcement of both the shell-like surface 22 and a door 34 that is pivotally mounted to the dispenser 10 and forms part of the outer housing 12. Specifically, as may be seen in FIGURE 2, door 34 includes a number of reinforcing ribs 38, and, as may be seen in a rearview of the unit as is depicted in FIGURE 6, shell-like forward surface 22 is reinforced by a number of reinforcing ribs 40. Reinforcing ribs 38, 40 function to absorb shock if the dispenser 10 is kicked, punched or bludgeoned.
In addition, the entire outer housing 12, including door 34, is preferably fabricated from a material that is both flame-retardant, so as to resist ignition if a vandal tries to ignite it with a match, cigarette lighter or torch, and that is easy to clean of graffiti as well. Preferably, the material is a polycarbonate-ABS blend, such as that which is available from GE Engineered Plastics under the trademark CYCOLOY. Outer housing 12 is also preferably fabricated from an opaque material so that vandals cannot see inside and therefore be tempted to force the dispenser open.

In an alternative embodiment, only the area about the first and second dispensing orifices 30, 32 at a bottom 28 of the outer housing 12 would be fabricated from the flame-retardant material. Studies have shown that when vandals try to ignite an article such as a towel dispenser, its usually done at the bottom near the dispensing orifices, and it is usually first attempted by lighting the towels that extend downwardly from the respective dispensing orifices 30, 32.

Referring now to FIGURES 2 and 3, it will be seen that access door is pivotally mounted to open from one side to another, as opposed to from top to bottom, so that a careless custodian will not have an opportunity to damage the dispenser by hanging on an open door. Moreover, access door 34 has no exposed hinges or handles, so that vandals will have no opportunity to tamper with the door or pry it open. This is achieved by a hidden hinge mechanism 36, best seen in FIGURE 3, that is provided entirely within the space defined by outer housing 12 so as not to be visible or accessible from the outside. Door 34 includes a viewing port 42 that is fabricated from a reinforced transparent material and is designed to resist impact without breaking. As is common in many of the dispensers marketed by the assignee of this invention, Scott Paper Company, door 34 has a display window 44 provided thereon that is constructed and arranged so that a decorative strip 48 can be displayed to a
user. For example, if the dispenser 10 is in a fast-food restaurant, the display window 44 may include a decorative strip 48 that includes the logo of the restaurant chain.

Dispenser 10 further includes a hidden locking mechanism 50 that is constructed and arranged so that the door 34 may be opened by maintenance personal without the use of any external handles or gripping ports. Specifically, locking mechanism 50 includes a keyed recess 52 that is connected to a camming mechanism 54, as may best be seen in FIGURE 5. Camming mechanism 54 is connected to a force-transmitting member 56 that in turn is coupled to a number of latch members 58. A number of spring fingers 60 are provided within the housing 12 to bias the door 34 toward its open position. A number of locking pawls 64 are provided on the door 34 for engaging the corresponding number of latches 58 that are connected to force-transmitting member 56. During normal use, door 64 would be closed, and the latch members 58 will be engaged with the pawls 64 in the manner that is shown in FIGURE 5. When a maintenance person wants to open the dispenser 10, he or she will insert a key into the recess 52 and twist, thus moving the force-transmitting member 56 upwardly and disengaging the latches 58 from the respective locking pawls 64. At this point, the spring fingers 60 will force the door 34 open to an extent that the maintenance person will be able to grasp the door and open it the rest of the way.

As a further deterrent to vandals, a second, non-functional decoy locking mechanism 46 is provided conspicuously at the bottom 28 of the outer housing 12, as may be seen in FIGURE 2.

In recognition of the fact that the outer housing 12 may be defaced in other ways, the entire outer housing assembly is constructed with double-seams 62 about the door 34 so as to be water resistant when washed. With the double-seam arrangement such as indicated by reference numeral 62, maintenance personal can hose down the dispenser 10 without fear of the paper towels therein becoming wet. A
sealing gasket can also be positioned between the seams (not shown).

It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.
WHAT IS CLAIMED IS:

1. An improved vandal-resistant paper towel dispenser for public washrooms, comprising:
   means for storing and dispensing paper towels; and
   an outer housing for encasing said storing and dispensing means, said outer housing comprising a rear mounting surface that is adapted to be secured to a wall, and a shell-like forward surface, connected to said rear mounting surface, for protecting said storing and dispensing means from individuals who might have destructive intent, said shell-like forward surface being softly rounded to an extent that it is practically impossible to obtain a handhold on the top or sides of said outer housing, whereby a vandal will be prevented from grabbing the dispenser and pulling it off the wall.

2. A dispenser according to claim 1, further comprising reinforcing means for reinforcing said shell-like outer surface against deflection and damage as a result of blows that might be imparted thereto by a vandal.

3. A dispenser according to claim 2, wherein said reinforcing means comprises a plurality of reinforcing ribs.

4. A dispenser according to claim 1, wherein said shell-like outer surface comprises a flame-retardant material.

5. A dispenser according to claim 1, wherein said shell-like outer surface comprises a material that is easy to clean of graffiti.

6. A dispenser according to claim 1, further comprising an access door defined in said shell-like outer surface.
7. A dispenser according to claim 6, wherein said access door has no exposed hinges or handles, whereby vandals will have no opportunity to tamper with said door.

8. A dispenser according to claim 6, wherein said access door is hinged to open from one side to another, as opposed to from top to bottom, whereby a careless custodian will not have an opportunity to damage the dispenser by hanging on the open door.

9. A dispenser according to claim 6, wherein seams between said access door and said shell-like outer surface are configured to be water-resistant, whereby the dispenser may be cleaned by hosing it down without damaging any product stored therein.

10. A dispenser according to claim 1, wherein said shell-like outer surface is opaque, whereby vandals cannot see therein.

11. A dispenser according to claim 6, further comprising a concealed locking and release mechanism for opening said access door.

12. A dispenser according to claim 11, further comprising a decoy locking mechanism that is more easily visible than said concealed locking and release mechanism, whereby vandals intent on opening the dispenser will be confused.

13. A dispenser according to claim 1, wherein said shell-like outer surface is corrosion-resistant, whereby the dispenser may be cleaned by hosing it down without damaging the dispenser.

14. An improved vandal-resistant paper towel dispenser for public washrooms, comprising:
means for storing and dispensing paper towels;
an outer housing for encasing said storing and
dispensing means;
an access door defined in said outer housing for
loading paper towels into the dispenser;
a concealed locking and release mechanism for
opening said access door; and
a decoy locking mechanism that is at least as
visible than said concealed locking and release mechanism,
whereby vandals intent on opening the dispenser will be
confused.

15. An improved vandal-resistant washroom product
dispenser for public washrooms, comprising:
means for storing and dispensing a washroom
product; and
an outer housing for encasing said storing and
dispensing means, said outer housing comprising a rear
mounting surface that is adapted to be secured to a wall,
and a shell-like forward surface, connected to said rear
mounting surface, for protecting said storing and dispensing
means from individuals who might have destructive intent,
said shell-like forward surface being softly rounded to an
extent that it is practically impossible to obtain a
handhold on the top or sides of said outer housing, whereby
a vandal will be prevented from grabbing the dispenser and
pulling it off the wall.

16. A dispenser according to claim 15, further
comprising reinforcing means for reinforcing said shell-like
outer surface against deflection and damage as a result of
blows that might be imparted thereto by a vandal.

17. A dispenser according to claim 16, wherein
said reinforcing means comprises a plurality of reinforcing
ribs.
18. A dispenser according to claim 15, wherein said shell-like outer surface comprises a flame-retardant material.

19. A dispenser according to claim 15, wherein said shell-like outer surface comprises a material that is easy to clean of graffiti.

20. A dispenser according to claim 15, wherein said shell-like outer surface is opaque, whereby vandals cannot see therein.

21. A dispenser according to claim 15, wherein said shell-like outer surface is corrosion-resistant, whereby the dispenser may be cleaned by hosing it down without damaging the dispenser.
## INTERNATIONAL SEARCH REPORT

### A. CLASSIFICATION OF SUBJECT MATTER

| IPC   | A47K10/42 |

According to International Patent Classification (IPC) or to both national classification and IPC.

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

| IPC  | A47K |

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched.

Electronic data base consulted during the international search (name of data base and, where practical, search terms used).

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US, A, 4 915 257 (BAILEY CURTIS C) 10 April 1990 see the whole document</td>
<td>1,4-11, 13-16, 18-21</td>
</tr>
<tr>
<td>A</td>
<td>US, A, 5 183 182 (COMSTOCK ET AL) 2 February 1993 see column 2, line 63 - column 3, line 53 see column 5, line 46 - column 6, line 18 see figures 1-5,15</td>
<td>1, 5, 6, 8, 10, 13, 15, 19-21</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents:
  - "A" document defining the general state of the art which is not considered to be of particular relevance
  - "E" earlier document but published on or after the international filing date
  - "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  - "O" document referring to an oral disclosure, use, exhibition or other means
  - "P" document published prior to the international filing date but later than the priority date claimed
  - "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
  - "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
  - "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
  - "&" document member of the same patent family

Date of the actual completion of the international search: 7 November 1996

Date of mailing of the international search report: 28.11.96

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentbaan 2 NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Telex 31 651 epo nl, Fax (+31-70) 340-3016

Authorized officer: Vrugt, S

Form PCT/ISA/310 (second sheet) (July 1992)
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CA-A-2103806</td>
<td>12-08-92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP-A-0572535</td>
<td>08-12-93</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO-A-9213795</td>
<td>20-08-92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US-A-5452825</td>
<td>26-09-95</td>
</tr>
</tbody>
</table>